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NEWS OF THE SERVICE

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EDITORIAL

The Editorial [illegible] must always represent a personal view and it is perhaps a good thing therefore that the editorship of the Journal of the Royal Naval Medical Service changes at regular intervals. This allows new ideas and a different emphasis to be represented while at the same time attempting to keep the Journal to the high standards it has always achieved in the past.

One welcome trend over the last few years which has been encouraged by the Editorial Committee has been an increase in contributions from more junior medical officers particularly on those subjects covering the occupational aspects and hazards of the modern sailor's life at sea.

Interest in this vitally important aspect of naval medicine has been greatly stimulated controlled and directed into proper channels by the formation of the Environmental Research Working Party. This could perhaps be regarded as a younger off-shoot of the rather better known Clinical Research Working Party but even if occasionally overshadowed in its youth by the rather better known and more popular fields covered by the older working party it is certainly developing well as a result of the enthusiasm of its members both uniformed and civilian. Some of these members (including TV personalities) are listed on the frontispiece. As in the case of the CRWP it will be seen that members include university professors and representatives of the Royal Naval Personnel Research Committee and their presence has already resulted in the development of a close liaison with several university departments [illegible]. This has been the greatest possible benefit of all those concerned with the occupational health of the sailor — not least to the sailor himself.

Perhaps because of the stimulus provided by the two Research Working Parties it is believed that not only the number but the quality of papers submitted for publication is still improving. To a certain extent this is reflected in the number of subscribers which — to the joy of the Editorial Committee is actually showing a small but steady increase instead of the decline experienced in the past.

On the principle of always leaving the party while it is still gaining in strength this is perhaps an appropriate time to hand on to a successor to whom every possible good wish is extended. Nevertheless any leaving has always a sad aspect and certainly the unfailing support of the Editorial Committee and in particular its Secretary will long be remembered and missed. If one last wish could be granted on departure it would be that the enthusiasm of subscribers to produce papers for publication should not blind them to the need for careful preparation because this task otherwise falls to the Secretary who cannot be expected to derive the same pleasure from an intensive review of the literature as would the writer of the original paper. In fact a piece of gratuitous advice is offered as a farewell present for use on a wide variety of occasions quite apart from writing for the Journal. Always check your references.

FIBREOPTIC ENDOSCOPY OF THE UPPER GASTROINTESTINAL TRACT AND ITS APPLICATION IN THE ROYAL NAVY

Richard H Hunt

ABSTRACT

Fibreoptic endoscopy of the gastrointestinal tract is now a well established technique and an invaluable diagnostic tool in the dyspeptic patient. In this paper the experience of 137 examinations carried out over a six month period at the Royal Naval Hospital Haslar is presented together with a discussion of the implications of this examination in the Royal Navy

Introduction

Dyspepsia and associated peptic ulceration are a major problem in the Royal Navy and result in the annual loss of a significant proportion of the Service manpower (Watt, 1970) Assessment of dyspepsia in the Royal Navy has been largely into ulcer and non ulcer dyspepsia with the stress upon duodenal and gastric ulceration (Watt 1971) The advent of fibre endoscopy of the gastrointestinal tract which may be performed routinely in the dyspeptic patient reveals a number of abnormalities both macroscopic and histological in addition to gastric and duodenal ulceration The everyday use of this new investigation will better help to delineate the dyspeptic problem and warrants further prospective analysis within the Royal Navy The results of an initial six month period of use of the upper gastrointestinal fibrescope is presented

Material and Method

Over a six month period from July 1 to December 31 1973 137 upper gastrointestinal endoscopies were performed on 127 patients at the Royal Naval Hospital Haslar

Patients were referred from both the Medical and Surgical Units and a proportion (68 per cent) had previously had a barium meal The clinical condition of the patient and the radiological findings if known were discussed before endoscopy in a number of cases the endoscopist was clinically involved in the management of the majority of the cases

All patients were prepared in a similar manner with an overnight fast. On the morning of the procedure a premedication of Pethidine 50 mgms and Atropine 0 6 mgms was given i m 30 minutes before the procedure A topical application of Lignocaine four per cent was given to the oropharynx by gargle and this was followed by i v Diazepam until ptosis or dysarthria was observed Endoscopes were all passed in the left lateral position Hyoscine N butyl bromide 40 mgms was given i v to paralyse the duodenal bulb when considered necessary

The ACMI 7089P panendoscope with extreme four way angulation of the distal tip was used routinely This is an end viewing instrument with which the whole of the oesophagus stomach and the first two parts of the duodenum may be visualised Multiple mucosal biopsies and cytology may be taken from all sites and a photographic record can be made on Tungsten Ektachrome film (Cotton and Williams 1972) On a number of occasions the Olympus GFB2 and the ACMI F5A lateral viewing gastro-duodenoscopes were available and were used additionally

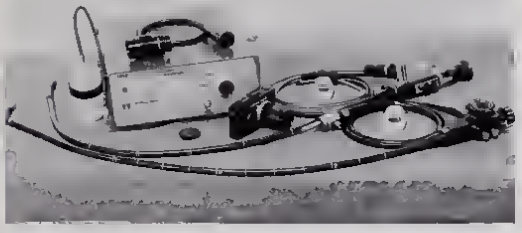

Fig 1 End viewing (inner) and lateral viewing (outer) gastrointestinal fibrescopes with light source, teaching attachment, camera and mouth guards

Table I

UPPER GASTROINTESTINAL ENDOSCOPIES		
No of oesophago gastro-duodenoscopies		137
No of patients		127
	male	118
	female	9
No of Service or RFA patients		91
No of civilian patients		36
No of patients to have 2 endoscopies		7
No of patients to have 3 endoscopies		2
Ages ranged from 16 years to 82 years		

Table II

ROUTINE ENDOSCOPY FINDINGS	
Oesophagitis	18
Oesophageal varices	2
Hiatus Hernia	9
Achalasia	1
Ca Oesophagus	2
Bile reflux	19
Gastric erosions	1
Gastric ulcer	4
Pre-pyloric gastric ulcer	9
Atrophic gastritis	4
Duodenal scarring	14
Duodenal ulcer	16
Duodenitis	18
Duodenal erosions	2
Duodenal polyp	1
Normal	36

Table III

EMERGENCY ENDOSCOPY FINDINGS	
Oesophageal varices	1
Gastric ulcer	3
Lupus plastica	1
Duodenal erosions	
Duodenal ulcer	3
Normal	1

Table IV

BARIUM MEAL FINDINGS	
Oesophagitis	1
Oesophageal varices	1
Hiatus Hernia	2
Achalasia	1
Ca oesophagus	2
Gastric ulcer	5
Pre-pyloric GU	5
Duodenal scarring	10
Duodenal ulcer	34
Duodenitis	34
Duodenal polyp	1
Normal	14

Results

The 137 oesophago gastro-duodenoscopies were carried out on a total of 137 patients. The breakdown of these patients is shown in Table I. Thirty-six of the patients (35 per cent) were civilians and 91 (65 per cent) were Service personnel or from the Royal Fleet Auxiliary (RFA). The ages ranged from 16 years to 82 years.

One hundred and fifteen patients were examined as cold cases and 12 patients as emergencies for acute upper gastrointestinal bleeding. The findings at routine endoscopy are shown in Table II and those for emergency endoscopy in Table III. For comparison the barium meal findings are shown in Table IV for the cases in which this procedure had been carried out. Seven patients examined had previously had gastric surgery. In none of these was there any evidence of recurrent or stomal ulceration. Biopsies for histology were taken in 73 patients and these results are tabulated in Table V and are discussed later in the paper. Cytology specimens were taken from lesions in nine patients but the numbers are too small and the experience remains too limited to warrant comment at this stage. Endoscopy failed to obtain adequate material for histology in one patient suspected of having Crohns Disease of the duodenum.

Fig 2 A modern flexible fibreoptic gastroscope

The ACMI 7089P was used in 120 examinations: the ACMI F5A or the Olympus GFB2 in eight patients and both the forward and a lateral viewing instrument in a further nine patients. The duodenum was visualised in 116 of the 120 patients in which it was attempted. Two of the 127 patients were unable to swallow the endoscope and in a further emergency case where there was difficulty with intubation the instrument was passed under general anaesthetic prior to laparotomy. A large posterior wall duodenal ulcer was found with evidence of recent haemorrhage. Definitive surgery was planned and carried out.

Table V

HISTOLOGICAL FINDINGS	
Ca oesophagus	2
Limbus plastica	1
Gastritis	34
Duodenitis	19
Failed biopsy	1
Traumatised biopsy	7
Normal	17

Thirty eight of the patients in the series either had no barium meal or this had been carried out more than four weeks before the endoscopy. There was agreement between macroscopic endoscopic observation and the barium meal in 41 patients (46 per cent) and there was disagreement in 48 patients (54 per cent). None of the cases where there was disagreement involved the radiologist missing important lesions and tended to be a result of his over reporting of both gastric and duodenal ulcers. No neoplastic lesions were found at endoscopy that had not been suspected at the barium meal.

It is important to note that 36 patients (32 per cent) examined as cold cases were found to be entirely normal at endoscopy.

Most patients tolerated the procedure well and as has already been reported [Brown Salmon and Read 1972, Smith 1974] a proportion preferred endoscopy to the barium meal.

Oesophageal perforation occurred in one

patient who was being endoscoped as an emergency after severe haematemesis She had been taking steroids for over 20 years for Stills disease The patient later died from haemorrhage and perforation of a large gastric ulcer a large duodenal ulcer was also present No other complications considered to be associated with or due to, endoscopy were encountered in this series

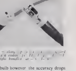

Fig [illegible] lateral viewing endoscope [illegible] and light bundles [illegible]

Discussion

Dyspepsia is a major problem in the Royal Navy (Watt 1970) Between 1959 and 1968 8 744 patients were investigated in hospital for dyspepsia and of these 3.092 had a duodenal ulcer proven at barium meal In 184 patients a gastric ulcer was found 5.468 patients were considered to have non ulcer dyspepsia and in a proportion of these there was thought to be radiological evidence of gastritis and duodenitis (Watt 1971) This represents a considerable number of man hours of investigation and also of lost working time to the Service with out considering the loss of highly trained manpower by invaliding The increased accuracy and high diagnostic yield afforded by the most recent generation of gastro intestinal fibrescopes such as the ACMI 7089F and F8 and the Olympus GIFD and GIFD2 are impressive (Lancet, 1974) They allow the whole of the upper gastro intestinal tract to be closely examined Lateral viewing instruments such as the ACMI F5A and the Olympus GFB2 and the JFB2 permit better visualisation of some areas which may only be seen tangentially with the end viewing instruments and may be used in conjunction with them or alone to inspect an area not well seen at the barium meal

Comparison between endoscopy and the barium meal has shown that the standard barium meal may detect 80 per cent of all lesions (Cotton 1973) In lesions of the duodenal bulb however the accuracy drops to about 60 per cent (Salmon Brown Hunt and Read 1972 Classen 1973) Despite this the standard barium meal remains a rapid and safe means of detecting the majority of lesions and though the double contrast barium meal may increase the diagnostic yield (Scott Harden 1973) it is time consuming The relationship between upper gastrointestinal endoscopy and radiology should remain complementary (Novis Bank Marks and Clain 1974) at the present time It seems from this series as might be expected that the greatest benefits from endoscopy derive from those cases with non-ulcer dyspepsia The advantages of having an endoscopy service to supplement the radiological investigation of dyspepsia has been demonstrated in a recent study of 50 dyspeptic patients seen consecutively in one General Practice (Barnes, Gear Nicol and Dew 1974) All patients were referred for a combined barium meal and cholecystogram followed by fibreoptic endoscopy Only 11 patients (22 per cent) had entirely normal endoscopic findings

Clearly then with a high incidence of dyspepsia in the Royal Navy there appears to be a very real need for a gastrointestinal endoscopy service However as elsewhere the exact proportion of patients that are benefited by the procedure has so far been difficult to assess and this should be done

prospectively In one series (Morrisey 1968) it has been estimated at 76 per cent (41 per cent major and 35 per cent minor) and as unfavourable in two per cent (one per cent major and one per cent minor)

The indications are more clear and should include all patients who are thought to have a neoplasm or a gastric ulcer when this should be visualised at endoscopy and multiple four quadrant mucosal biopsies taken together with cytology Confusing and uncertain radiological appearances may be checked and the area biopsied if necessary Patients with persistent symptoms after gastric surgery should all be endoscoped for the accuracy of the barium meal diminishes considerably in this situation (Cotton Rosenberg, Axon, Davis Pierce Price Stevenson and Waldram 1973)

Several authors (Cotton Rosenberg Waldron and Axon 1973 Katon and Smith 1973 Forrest Finlayson and Shearman 1974) have testified to the value of emergency endoscopy in upper gastrointestinal bleeding Expert radiology may readily identify a potentially bleeding lesion but cannot determine actual or recent haemorrhage (Lancet 1974) The patient is first resuscitated with an adequate transfusion and the procedure carried out when a stable cardiovascular state has been achieved A naso gastric tube is passed prior to endoscopy and is left in situ Contrary to common expectation the stomach seldom contains blood and the view is usually excellent On the rare occasion that a large quantity of blood is encountered the stomach may be washed with a large bore stomach tube and Senorans stomach pump In one series of 208 patients (Cotton Rosenberg Waldron and Axon 1973) with upper gastrointestinal bleeding a precise diagnosis was made in 80 per cent of all patients and in 96 per cent of those where the final diagnosis lay in the oesophagus stomach or first two parts of the duodenum Multiple lesions were found in 15 per cent of the patients and 26 per cent of those with a known duodenal ulcer were bleeding from a site other than their ulcer In the small number of 12 patients who underwent emergency endoscopy in this series the findings allowed the three patients who went to emergency surgery to have planned definitive procedures The patient with oesophageal varices had undergone splenectomy eight years earlier and had gross varices but was found to be bleeding from a gastric ulcer

The one complication in this series occurred in the emergency group and it should be pointed out though fibreoptic oesophago gastro duodenoscopy is well tolerated and reasonably safe (Salmon *et al* 1972 Belber 1971 Classen Koch and Demling 1971 Morrisey 1972) there is a greater risk in the already ill patient The overall incidence of complications in Great Britain is 1 300 and the mortality is 1 4000 (Schiller Cotton and Salmon, 1972) It has been quoted (Cotton 1973) that this is no greater than in the procedure of intravenous cholangiography (Ansell 1970) and is less than for percutaneous liver biopsy (Zamcheck and Klausenstock 1953)

Within the Royal Navy the clinician is commonly faced with a patient who has persistent severe symptoms of dyspepsia with repeatedly normal barium meals The symptom of epigastric pain is common and a typical history to suggest ulceration is often not elicited This symptom is known to be associated with oesophagitis and with duodenal ulceration The severity of the symptoms may correlate poorly with the endoscopic findings and vice versa (Brown Salmon Htut and Read, 1972 Hunt, 1972) Oesophagitis may occur in conjunction with duodenal ulceration or alone and is almost impossible to diagnose radiologically Conventional medical treat

ment given for dyspepsia such as the anticholinergic drugs will aggravate oesophagitis A number of those patients thought to have oesophagitis endoscopically have been given Metoclopramide which has been shown to potentiate the action of the lower oesophageal sphincter (Dilawari and Miselwicz 1973) This treatment has led to a marked loss of symptoms and further evaluation of its use is awaited In addition to oesophagitis endoscopy in the radiologically non ulcer dyspepsia group may reveal unexpected gastric or duodenal ulceration pre-pyloric ulcer gastritis or duodenitis and bile reflux Sixty four patients with dyspepsia were submitted to biopsy of the duodenum and gastric antrum Some patients were known to have had a radiologically proven duodenal ulcer in the past and in some patients a duodenal ulcer was present at the time of biopsy Of the 64 patients 18 had changes of duodenitis and 34 patients had changes of gastritis on histology The significance of these findings is discussed elsewhere (Hunt Bouskill Lowe and Soutar in prep) but clearly the relationship of these findings to symptoms the patient's job environment and his ultimate management remain to be evaluated The dyspeptic patient with a normal barium meal and upper gastrointestinal endoscopy who has normal pancreatic and gall bladder function with no evidence of colonic disease may be completely reassured and returned to full duty in medical category P2 and in addition be considered fit for submarine service In view of the accepted frequency of duodenal ulcer within the Royal Navy pancreatic gall bladder and colonic disease can be rapidly excluded on the history or clinically and as with 36 132 per cent) of the cold cases in this series the upper gastrointestinal tract can be shown to be normal The speed with which the endoscopy may be performed not only helps to delineate the 'grey' area of dyspepsia but has [illegible] investigation [illegible] their retention for long periods to reduced medical categories with a suspect diagnosis

Acknowledgements

I should like to thank the following for their help in the preparation of this paper

The Clinical Consultants who referred patients the Radiologists for their help in correlating the Ba meals Surgeon Lieutenant K C Bouskill for examining the histology LMA Westermann and MT2(N) Stanton for their work as endoscopy assistants and Wappler Endoscopy and Keymed for their help in initiating this investigation

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ABSTRACT

MILTON-THOMPSON G J, WILLIAMS J G, JENKINS D J A and MISIEWICZ J J (1974) Inhibition of Nocturnal Acid Secretion in Duodenal Ulcer by one Oral Dose of Metiamide. Lancet i, 693-694.

The effects of Histamine, the stimulation of gastric acid secretion and cardiac acceleration are not blocked by Mepyramine and other conventional antihistamines. In 1972 Black and his associates developed Burimamide, the first of a new group of drugs which blocked Histamine H2 receptors, inhibiting both Histamine and Pentagastrin stimulated gastric acid secretion. This was followed by the development of Metiamide, a more potent Histamine H2 receptor antagonist, and raised the possibility that these drugs might be effective therapeutic agents in the treatment of duodenal ulcer.

This paper describes the effect of a single oral dose of Metiamide, given on retiring, on overnight basal gastric acid secretion in patients with duodenal ulcer. Each patient acted as his own control, receiving Metiamide or placebo in two studies not more than a week apart. Ten of the 11 patients studied responded to Metiamide with a highly significant reduction of acid output and rise in pH of the gastric contents. Eight patients were rendered anacidic for periods ranging from one to six hours after the drug and in five patients the pH of gastric contents remained above 5.0 for five hours.

This is the first available drug which administered on retiring significantly reduces acid secretion for the greater part of the night in patients with duodenal ulcer. Since nocturnal pain is a frequent symptom of duodenal ulcer and is likely to be related to gastric acid output, this group of drugs has important therapeutic possibilities.

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AN OLD SOLDIER'S WOUND

Bruce Victor Jones

ABSTRACT

Chronic osteomyelitis following gunshot wounds often appears to be incurable The case described below shows that perseverance on the part of both surgeon and patient can eliminate a sinus even when it has been discharging for many years.

Case Report

While serving in Mesopotamia in 1918 Mr L S now aged 76 was hit in the right thigh by a dum dum soft nosed bullet which shattered the femur at the junction of the upper and middle thirds He was evacuated from the desert battlefield on a bullock cart and after a spell in a Casualty Clearing Station was taken to a hospital in Egypt where he remained for two years Various operations were carried out he remained in bed for 12 months The femur united in 18 months but it was three years before the resulting sinus healed

It remained healed until 1946 when he accidentally hit the thigh with a hammer while cutting concrete with a cold steel chisel The sinus reopened and never healed again In January 1972 he had three small haemorrhages from the sinus and was referred for opinion as to whether there was any possibility of closing it

He presented with a sinus on the front of the thigh discharging large quantities of exceedingly foul smelling pus from which B Proteus was grown The femur was soundly united with 20 varus angulation and 5 cms shortening

X rays showed a sclerotic femur containing an antero medial cavity with a small piece of metal in it and further metallic fragments in the surrounding soft tissues (Fig 1)

On June 19 1972 he was admitted to hospital He was put on Septrin ½ gms b d

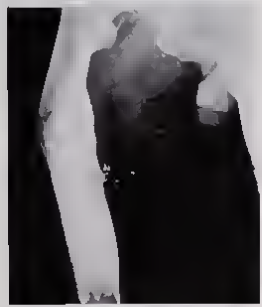


Fig 1 Pre-op

and after controlling the profuse discharge with daily eusol irrigations a sinogram was done This shows the comparatively small extent of the bone cavity (Fig 2)

On June 30 1972 a curettage and bone grafting operation was carried out Prior to bringing the patient to the theatre the thigh wound was sealed off with Sleek strapping a povidone iodine dressing was applied to the right hip region half an hour before operation

The first step in the operation was to take cancellous bone grafts from the right iliac crest the wound being closed in layers and sealed off with Sleek A Redivac closed suction drain was used The thigh was then prepared and the femur exposed through a 6" longitudinal incision excising the sinus A bone cavity 3 cms in diameter was found it contained foul smelling cheesy material This and a small piece of metal were removed by curettage and the sclerotic bone cut away with gouges The cavity was packed with cancellous

bone chips and the wound closed in two layers with suction drainage Systemic Septrin was continued

Convalescence was complicated by an exacerbation of chronic bronchitis Despite the precautions taken to isolate the hip wound this became infected with *Staph Pyogenes* and this organism also colonised the thigh wound

The iliac crest wound healed in two months but the thigh sinus failed to do so despite further curettage procedures Streptomycin wicks and the continued exhibition of Septrin However the sinus became very small and the antibiotic treatment was discontinued three months after operation Six months after operation it was felt unlikely that anything further could be achieved he now only required a dressing every other day

He remained in this state for a further six months after which it was decided to have one last try at healing the sinus On July 4 1973 after sealing the sinus with Sleek cancellous bone chips were taken from the neck of the right femur through a small window cut in the greater trochanter and the wound closed and sealed off with suction drainage The scar in the thigh was then excised, including the sinus A small bone cavity was found containing little pus but a quantity of granulation tissue and one thin sequestrum 2 cms x 1½ cms this was removed by curettage Sclerotic bone was once again cut away and the cavity packed with bone chips and the wound closed with suction drainage As the infecting organism was now limited to *Staph Aureus* Floxapen 250 mgms six hourly was given for two weeks followed by Lincocin 500 mgms eight hourly and Fucidin 500 mgms eight hourly for two months

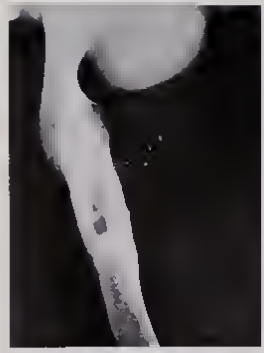
On this occasion both wounds healed per primam and it is of interest to note that although the bone grafts were taken from the upper end of the femur which was the site of the chronic osteomyelitis no infection of the donor wound occurred It had in fact been considered that there was so little circulation through the dense bone above the osteomyelitis that intramedullary spread of the infection would be most unlikely

One year later both wounds remained soundly healed with no signs of inflammation (Figs 3 and 4)

Discussion

The history of the treatment of chronic osteomyelitis is full of disappointments and in many cases the attempt at cure has eventually been abandoned leaving the patient with a permanently discharging sinus With advances in antibiotic therapy and a better appreciation of the fundamentals underlying the surgical management of these cases a high proportion though not all can now be cured

There has been a number of different approaches to the problem in recent years



[illegible]

[illegible] shortening of the upper [illegible] removal of head of the trochanter

Bell (1968) relied on oral antibiotics, usually Cloxacillin or Phenoxymethyl penicillin given orally with Probenecid for six months, with surgery limited to draining abscesses and removing sequestra. 16 out of 19 cases healed. Bryson and Mordell (1964) relied on sequestrectomy, wound closure and local instillation of Penicillin and Streptomycin; they did not attempt to fill the bone cavity with living tissues. Willenegger and Roth (1962) treated infected fractures by means of local irrigation with antibiotics and this principle was adopted by Taylor and Maudsley (1970) using continuous drip irrigation of the bone cavity with saline containing appropriate antibiotics through a closed drainage system over a period of six weeks; pump suction was used to remove the fluid. They used Chloromycetin or Orbenin at 1 gms a litre, Streptomycin at 1 gms a litre or Penicillin at 2 mega units a litre and ran 1–1½ litres of fluid a day through the system. They reported good results in 8 out of 11 cases. Rowling (1959) used a different approach. He excised all soft tissue scarring and all dead bone and filled the bone cavity with a pedicled muscle graft with a blood supply. The wounds were closed without drainage and systemic antibiotics were given for six weeks post operatively. He obtained good results in 48 out of 58 cases. Most of these were old war wounds many having been sustained over 30 years previously; one case healed for the first time in 42 years. Allgower, Muller and Willenegger (1965) advised filling the bone cavity with cancellous bone grafts after removing all dead tissues.

There is no doubt that the fundamental problem in chronic osteomyelitis is that the affected bone, even if it is not completely dead, does not have sufficient blood supply to overcome the infection. It is not only sequestra that are dead. After a fracture the broken ends of any long bone

lose their blood supply for a distance which varies from a millimetre or two to several centimetres In a simple fracture which unites uneventfully this avascular bone will eventually become revascularised though it may take years to do so In an infected fracture the blood supply may become so restricted by fibrosis that this never happens The dead bone will not necessarily be thrown off as a sequestrum commonly it remains *in situ* and there is a gradual change from completely avascular bone through bone with a poor blood supply to normal bone as one moves along the shaft away from the fracture site Nor is it only the bone that is involved the dense fibrosis which forms in the surrounding soft tissues as a result of injury and subsequent infection effectively strangles any blood supply which might otherwise grow into the affected bone

It is for these reasons that simple removal of sequestra and abscess drainage coupled with antibiotic treatment however administered is only likely to succeed in cases where the bone sclerosis and soft tissue fibrosis are not so dense as to preclude natural revascularisation taking place This is not likely to be the state of affairs in long-standing gunshot wounds In these cases it is necessary to excise all the avascular bone and soft tissue scarring and fill the defect in the bone with living tissues This is of course easier said than done In the case described above for example it was quite impossible to excise all the soft tissue scarring as the femoral nerve and vessels ran through it It is necessary to cut back all avascular bone to the point where it bleeds freely This is likely to appreciably weaken the bone, and hence it is preferable to fill the cavity with cancellous bone chips which will become incorporated as a bony repair rather than use a muscle graft as advocated by Rowley (1959) It is now generally accepted that having eliminated the source of infection in this way it is better to close the wound rather than resort to open drainage though closed suction drainage is of great value in removing the inevitable haematoma

The role of antibiotics is to control infection pre operatively and post operatively it is logical to use them both locally and systemically The irrigation technique described by Taylor and Maudsley (1970) has proved of great value in managing infections associated with metallic implants in bone such as Kuntscher nails or total joint replacements

Surgery may be well worth while even if it does not produce a complete cure In the case described above the operations carried out in 1972 did not result in complete closure of the sinus but they produced such a vast reduction in the amount of discharge that the treatment would have been well worth while even if it had not been decided to carry out the final operation in 1973 which resulted in complete healing

Summary

A case of chronic osteomyelitis of the femur following a gunshot wound is described

The patient presented 54 years after the original injury although healing had eventually been achieved after the original injury a minor blow 28 years later resulted in a sinus forming which remained unhealed for 26 years

Following excision of dead bone and cancellous bone grafting on two occasions, supplemented by antibiotics healing of the sinus was achieved and remained sound one year later

Current approaches to the problem of chronic osteomyelitis are described and the avascular basis for the condition is discussed With surgery aimed at removing all avascular tissues and antibiotics given

locally and [illegible] satisfactory results can be [illegible] in many but not all cases.

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ABSTRACT

BLACKLOCK N J and BLAVIS I P (1974). The Response of Prostatic Fluid pH to Inflammation. *British Journal of Urology* 46 537-542.

The pH of the fluid in prostatitis urine and digestive juices found both in the experimental animal and in the normal human to vary from 6.2 to 6.5. This compares with a plasma pH of 7.4. The presence of an pH gradient of this magnitude across prostatic epithelium gives rise to consequences in which ion trapping may occur and this according to Shanley *et al* (1970) is one of the factors which might be involved in the concentration of basic antibiotics particularly the basic macrolides in prostatic fluid. In explanation of the ion trapping phenomenon a basic antibiotic with high pKa which is unionized in the tissue fluid with its pH of 7.4 will in the unionized state tend more easily to pass through the cell membranes. If the prostatic epithelium having passed into the prostatic fluid of the acini and ducts with its normal pH of 6.5 the antibiotic will become ionised and in this state the cell membrane of the prostatic epithelium will be relatively impermeable to its passage back into the tissue fluid. Antibiotic molecules are therefore trapped. If the prostatic fluid had a pH equivalent to that of the tissue fluid a similar basic antibiotic would remain unionised within the prostatic acini and ducts and their fluid in a state which would allow its diffusion back into the tissue fluid. Concentration of antibiotic would therefore be unlikely to take place.

Experimental work using dogs has shown that basic antibiotics were in fact concentrated in prostatic fluids with pH of 6.6 and concentrations were as much as three or four times that of serum levels. It was however significant that in all of these experiments the cancer prostate gland was not inflamed. The present paper draws attention to pH changes in human prostatic fluid in which there was evidence of inflammatory reaction.

Expressed prostatic secretion was obtained both from a control series of men with no evidence of inflammation of the prostate and from a series of cases of prostatitis. In the measurement of pH both the Radiometer pH meter (Radiometer E 5021 V A Hewe, London) and Combilyte Duotest pH papers (Combilyte Ltd Cambridge) were used. The latter pH papers had a range of pH 8.0 to pH 8.8. It was evident in comparison of these two techniques that the pH papers were reliable allowing this rapid simple method to be used in daily practice.

Expressed prostatic secretion (EPS) containing fewer than 10 leucocytes per high power field (HPF) was found to have a pH which varied between 6.1 and 7.7 (mean 6.6). This was similar to specimens of normal canine prostatic fluid. In specimens of fluids from patients with prostatitis and in whom there were more than 10 leucocytes per HPF there was a variable increase in pH. In general the greater the number of leucocytes in the higher the pH and in the presence of a pronounced leucocytic response pH could be as high as 8 (mean 7.7). In cases of the immunocytes inherent in leucocyte mounting in specimens of EPS and the possibility of sampling errors there was no validity in equating the number of leucocytes present with a specific pH change but in general it appeared that the greater the leucocytic response the greater the elevation of pH. This pH change did not appear to be related to the presence of bacteria and in a number of cases in whom the pH was as high as 8 culture of the EPS remained sterile. The pH change therefore appeared to be an encompassment of the inflammatory response of the prostatic acini and ducts and the clearance of prostatitis whether this was bacterial or not.

During the course of a specific inflammation on pH was found to return slowly to the normal level. This was in general slower than the resolution of the pallid inflammatory response.

The findings showed that in inflammation the pH milieu conformed to the pH static within

(Continued on page 21)

RESPIRATORY HEAT LOSS AND OTHER THERMAL PROBLEMS OF DEEP DIVING*

R de G Hansna

ABSTRACT

In deep diving, heat loss from the body is very great and the respiratory component increases enormously due to the physical properties of the oxy-helium breathing mixtures. Keeping the diver warm is not only a problem when he is in the water, but also when he is in the diving bell and, to a lesser extent, in the living quarters. These problems are discussed and it is shown that failure of the heating system could rapidly produce serious effects.

Introduction

If man is to live and work under water at depths of 600 ft (180 mt or over one of the major problems to be overcome is that of heat loss. The moment a diver goes underwater he is in an environment that is about 60 times more viscous more than 800 times as dense and has a thermal conductivity 25 times more than that to which he is accustomed. In addition to this at these depths it is impossible to use air as the breathing gas, due to the following facts: firstly the partial pressure of oxygen would be far in excess of that which produces convulsions in man (Donald 1947). Secondly at depths in excess of 100 ft (30 m) there is a gradual increase in nitrogen narcosis (Behnke Thomson and Motley 1935) called by Cousteau (1953) L'ivresse des grands profondeurs and by British divers 'Narks'. The difference in nomenclature says something about the difference in national character between the French and English. Both these factors limit the depth to which air can be used as a breathing gas. For these reasons the divers must live in and breathe an atmosphere of helium and oxygen in which the partial pressure of the oxygen is kept below toxic levels. At a depth of 250 m the breathing gas is 98 per cent helium. Unfortunately helium has a high thermal conductivity and specific heat which together with its low viscosity and increased density makes for great thermal transfer properties. This leads to problems in keeping the divers comfortable in their living quarters and means that when working in the water they can lose a great deal of heat through the respiratory tract. At the depths we are considering the technique of saturation diving is employed. This technique is based on the fact that after a certain period at pressure the body equilibrates at that pressure so that the decompression time is the same regardless of an increase in the length of the bottom time. This requires the diver to live at pressure for a number of days inside a pressure complex and to use a diving bell for transferring to and from the sea bed. Therefore there are three distinct areas in which thermal problems can arise:

a. The living quarters
b. The diving bell
c. The diver

Living Quarters

The problem here is comparatively easy provided that the ship which is carrying the complex can provide adequate heating and air conditioning. Raymond has studied the problem of maintaining body temperature under these conditions both from the theoretical (1966 and 1967) and experimental (1968) sides. His main find-

Paper read to Section of Occupational Medicine, Royal Society of Medicine, April 18, 1974.

ing was the great increase in conductive/convective heat loss which occurs in hyperbaric helium atmospheres This is not surprising when the thermal properties of helium are considered The increase in convective heat loss from the body in helium at 14 6 bar being nearly three times that in air at 1 bar at approximately the same ambient temperature 42 w/m² (36 1 Kcal/m²/hr) as against 15 w/m (13 Kcal/m²/hr) The comfort zone in the helium environment is narrow 30°C + 2°C and atmospheric movement can accentuate any temperature difference

Diving Bell

This is often referred to as the Submersible Compression Chamber or SCC and contains the diver and attendant This diving bell can be locked on and off the diving quarters and is used to take the divers to their work Hare the difficulty of providing heat is more difficult but the problem can be overcome by supplying electrical heat (8-40 kw) to the wall of the bell and covering it with incompressible insulating material made from fly ash from power stations However care must be taken that the attendant who will later be diving in his turn does not become overheated As previously mentioned a comfortable temperature for the living quarters is about 29 30 C but it can be uncomfortably hot working in an impervious and well-insulated diving suit in such conditions and the sweating induced by this may spoil the insulation of the clothing

The Diver

For the man in the water heat loss must be made good by heat replacement and the amount of heat required is a function of the water temperature the depth the gas mixture breathed and the effectiveness of the insulation The insulation of the diving suit depends upon the thickness and thermal conductivity of the material

The heat loss across the suit is expressed in the equation

$$Q = \frac{K}{L} A \Delta T$$

Where Q = heat flux from the suit
K = thermal conductivity of the suit
A = surface area
L = thickness of the suit
T = difference in temperature between skin and water

There are basically two forms of insulating suit the wet and the dry

Wet Suit

Foamed neoprene relies for its insulation on the gas trapped within it. The thickness and hence the insulation of a foamed neoprene wet suit diminishes under pressure but if it remains at high pressure in a helium atmosphere it will re-expand but only slowly However since the thermal conductivity of helium is about five or six times that of air so the insulation of the re-expanded suit is much less than it was in air Furthermore when the diver enters the water the neoprene quickly loses the helium and the suit loses thickness On return to the habitat the partial pressure of the helium in the suit is still the same as it was before entering the water so there is no re expansion For these reasons foamed neoprene wet suits are not considered suitable for use as insulation at depth and certainly not when living in a helium environment However they are used by the USN but more as a containing envelope for their hot water system rather than for any insulative value

Dry Suit

The dry suit relies for insulation on gas trapping layers of clothing worn beneath an impermeable outar garment The efficiency of the insulation depends upon

thermal conductivity of this gas If this is helium the insulation provided is much less than if it were air Suggestions have been made that carbon dioxide could be used as a suitable gas for suit inflation but this is not used as it can combine with sweat to form a carbonic acid which is extremely irritating also with increasing pressure it becomes increasingly conductive and it will liquefy at 4 0 C if it is used at a depth of 426 m Nitrogen is not used since it is a contaminant which is difficult to get rid of in the helium reclamation process

Heat Supply

Basically there are two methods which can be used for supplying heat of approximately 2 5 kw to the diver The first is hot water either in a closed circuit system or free flooding as in the US System Apart from the obvious advantages of water heating there are problems in providing an efficient pump and the method of heating the water itself

Also it must be remembered that the maximum inlet temperature allowable is 43 C otherwise scalding may occur The second method is to use electrical heating wires knitted or woven into the suit heating panels of metal foil or fibres However there are electrical hazards even though the diver in the water is surrounded by an earth screen The physiological effects of alternating current through the body between 10 300 Hz are approximately six times worse than those of a direct current of equal value For this reason the only power which is felt to be safe is a direct current which has been fully smoothed (Common and Kettle 1972)

Respiratory Heat Loss

Recently Respiratory Heat Loss has become an area of great interest to those engaged in the task of forwarding man's exploration of the sea Webb and Annis (1966) investigated respiratory heat loss with high density gas mixtures at one, four and eight atmospheres It was shown that there was a consistent relationship between the percentage of the total heat loss represented by the respiratory loss and the increasing density and specific heat of the gas mixtures Rawlins and Tauber (1969) pointed out that in a diver at rest at 600 ft breathing oxy-helium at 10 L/min the respiratory heat loss can be about 125 watts the same as the metabolic heat generation (Fig 1) Increased work at this depth increases both factors and they tend to cancel out. It was suggested that when working at greater depths respiratory heat loss would outstrip increased metabolic rate and thus necessitate the heating of the inspired air Later experiments (Hoke *et al* 1972) appear to confirm this view Figure 1 also shows the great increase in heat loss with increased ventilation at depth

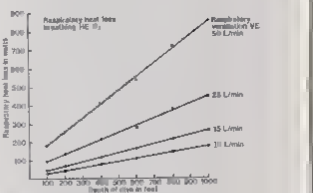

Fig 1 *Ventilation and heat loss at depth (after Rawlins and Tauber 1971)*

Calculation of Respiratory Heat Loss

The respiratory heat loss consists of two components The convective part which is the heat required to warm the breathing mixture and the evaporative which is the heat lost in humidifying it These two components can be calculated from measurements taken during inspiration and expiration then summed to give

the total respiratory heat loss The formula for this calculation derived from that nsed by Webb and Annis (1966)_ is shown below

$$R H L = \frac{Ve \cdot P \cdot Cp \cdot te \; t_i) + l (We \; Wi)}{60}$$

where R H L — Respiratory heat loss in watts

Ve — Minute volume in litras/min at standard temperature and pressure

P — Density of the gas at standard temperatnre and pressure in g/litre

Cp = Specific heat of the gas at standard temperature and pressure in jonles/g/c

l = Latent heat ol vapour isation of water in joules/g

te t_i = Difference between expired and inspired gas temperatnre in C

We Wi — Difference between expired and inspired water vaponr in g/min

At the surface of the sea (one bar) the greatest percentage of heat loss under normal environmental conditions (approximately 80 per cent) is in the latent heat of evaporation of the water vapour expired (Hanson 1974) However as the depth increases and the gases become more dense the convective component becomes ol paramount importance dne to the Thermal Transler Propertues of the oxy-helium environment (Fig 2 adapted from Hoke *et al* (1971) shows this) Ambient water temperature. which divers at depths ol 200 250 metres aronnd the Atlantic part of the European continental shell are likely

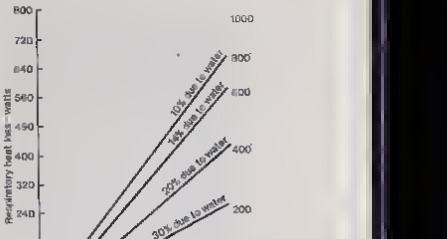

Fig 2 *Respiratory heat loss (inspired gas at 33) (after Hoke et al).*

to enconnter are between 5 and 10°C Fughster (1960) Respiratory heat loss in air at this temperature presents no problems under normal atmospheric pressnre but at depths of 250 metres in an oxy-helium environmeat it is doubtful if man can maintain thermal equilibrium even if the respiratory tract is the only sonrce ol heat loss Under these conditions the temperatnre and moistnre exchange which normally takes place in the npper respiratory tract the major part of the warming being concluded in the 'irst 9 cm (Webb_ 1951)_ may extend deeper into the body Findings reported by Rawlins (1970) with oxy helinm mixtnres between 0 and t C down to 800 ft appear to suggest that with the denser gas mixtnres at depth the warming may not be so rapid It was reported that at 200 ft (60 m) the subjects were conscious of cold at the level of the larynx at 400 ft (122 m) the cold was felt at the level of the sternal notch by 600 ft (183 m) it had reached the midd e ol the sternum and by 800 ft (244 m) the cold sensation

was deep in the chest

If in fact cold oxy helium or perhaps a liquid breathing mixture as suggested by Kylstra (1969) is reaching the lowest part of the respiratory tract the amount of heat lost by convection through the large surface area of the lungs estimated at 70 to 80 square metres (Bell Davidson and Scarborough 1965) must be given serious consideration

The size of the surface area is concerned with the rate of heat exchange rather than the absolute quantity but at a depth of 250 metres with a minute volume of 10 litres inspired helium will require 125 watts to raise its temperature from 5 C to 37 C If moderate exercise is undertaken and the minute volume increases to 40 litres a minute the energy required will be approximately 500 watts As an illustration of the amount of heat required to supply this demand consider the following example

Let 125 watts = heat required to warm inspired gas

Cp = specific heat of blood 0 92 cals/g/°C or 3 85 J/g/ C

M = mass flow of blood through lungs 88 33 g/sec. (Cardiac output taken as 5 litres/min and the specific gravity of blood as 1 06)

t = temperature difference in °C

Then Cp M Δt = 125

Δt = 125

3 85 × 88 33

Δt = 0 37 C

This means that the amount of heat required to warm the inspired gas would be sufficient, in a hypothetical steady state to cool the circulation through the lungs at a rate of approximately 0 4°C per second

It can be seen how difficult it would be to overcome this respiratory heat loss by attempting to warm a skin area of 1 8 or 2 0 m² which cannot tolerate water at a temperature greater than 43°C (Rawlins and Tauber, 1971) It is apparent that under these ambient conditions the breathing gases must be heated in some way to reduce the heat loss by this route and the US Navy has already laid down minimum limits for the breathing gas temperatures for deep diving (Fig 3)

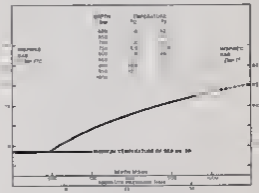

Fig 3 *Minimum safe inspired gas temperature limits (adapted from the USN Diving Manual)*

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(Continued from page 15)

and ducts by the prostatic fluid was approximately the same as or higher than that of plasma and tissue fluid. The pH gradient between the tissue fluid and prostatic acini in normal circumstances was therefore minimal or non existent or even reversed in prostatitis. Assumptions regarding concentration of antibiotics in the acini and ducts of the prostate which had been made on the basis of the pH of prostatic fluid from experiments with the normal dog prostate was therefore not valid in the human when the prostate was in a state of inflammation.

Other factors are, however involved in antibiotic diffusion within the tissues and these include lipid-solubility and protein binding both of which are of great importance in the ultimate concentration of antibiotics within the prostatic acini and ducts. Nevertheless the pH of the prostate fluid is not only significant in the ultimate antibiotic concentration within the prostatic acini and ducts but is also important for its possible influence on the biological activity of the antibiotic since slight variation in pH may considerably alter this (Reeves *et al* 1973).

At this stage it seems likely that effective therapy for prostatitis will require a combination of antibiotics selected for their ability to penetrate the prostatic fluid in adequate concentration and with a maximum biological activity between pH 7 and 8.

Since the phenomenon of elevation of the pH of the EPS has been shown to be in accompaniment of the inflammatory reaction it is possible that this could be used as the basis of a simple colourimetric diagnostic test for prostatitis.

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WARM WATER IMMERSION INJURIES OF THE FEET — A REVIEW

M. D Catterall

ABSTRACT

Warm water immersion injuries of the feet are of considerable relevance to military operations in tropical and sub-tropical regions

An outline of experience gained during the 1939-45 and Vietnam wars is given.

Recently two distinct warm water immersion injuries have been delineated viz. Warm Water Immersion Foot (WWIF) and Tropical Immersion Foot (TIF), the latter resulting from longer periods of immersion

The current state of knowledge with respect to pathogenesis, clinical features, histopathology, management and prophylaxis, of these two syndromes, is presented

A requirement exists for further study, with emphasis on the pathogenesis and prophylaxis of Tropical Immersion Foot.

Introduction and Historical Aspects

During the Second World War ship wreck survivors suffered prolonged exposure of their extremities to cold as a result of spending many hours afloat in waterlogged lifeboats or clinging to rafts The Syndrome which resulted from such exposure was termed Immersion Foot and was essentially caused by a degree of cold insufficient to effect tissue freezing thus distinguishing it from frost-bite

Ungley Channell and Richards (1945) noted that the condition resulted from exposure to sea-water at temperatures between 1 9 C (the freezing point of sea water) and 15 C and preferred the term peripheral vasoneuropathy after chilling to describe it The main features were initial intense vasoconstriction followed by hyperaemia oedema and intense pain In severe cases gangrene developed and even the more fortunate suffered paraesthesiae and recurrent swelling for many weeks

Only during the 1939-45 war was the syndrome accurately delineated but there is evidence that its occurrence had been noted as early as 1727 (Critchley 1943) It was recognised during the Crimea campaign when Larrey described the affliction as Trench Foot Shannon marooned in the Arctic for seven days in 1832 is said to have lost 30 of his company of 49 from the maritime equivalent Immersion Foot (*Lancet* 1967) During the 1914 18 war it was commonly seen among torpedo attack survivors (*Lancet* 1967) as well as in soldiers fighting in the trenches

Not until the American landings in Leyte in 1944 was it realised that a similar syndrome could be caused by immersion in relatively warm water (15-32°C) (Taplin Zanis and Blank 1967) The resultant condition has been colloquially known by a variety of names- including paddy-field foot, tropical jungle foot and swamp foot

In 1965 US Marines were found to be sustaining massive wet foot casualties in South Vietnam after prolonged patrols in flooded terrain (Allen and Taplin, 1973a) Buckels Gill and Anderson (1967) noted that the soles of the feet of these casualties were white wrinkled and so painful that it was difficult to walk He coined the term Warm Water Immersion Foot for this syndrome Although disabling at the time of occurrence the symptoms subsided rapidly when the patient was removed from the wet environment and most can return to duty within a week (Taplin *et al* 1967)

If the term "Warm Water Immersion

Foot (WWIF) is restricted to those cases of the painful white wrinkled sole syndrome a variant can be recognised in which the ankles and dorsa of the feet are involved by symmetrical erythema oedema and tenderness with a line of demarcation at boot top level This latter entity was recognised particularly in the Mekong Delta of Vietnam in men who had been unable to remove their wet boots and socks at night and who were often required to march stand and sleep in water up to the waist for periods of four to ten days It has only recently been proposed that this syndrome should be differentiated from WWIF by Allen and Taplin (1973a) who have reserved for it the name Tropical Immersion Foot (TIF) As with WWIF recovery usually occurs within four or five days on conservative management Unlike cold immersion injuries gangrene and other sequelae do not occur (Allen and Taplin 1973a)

Pathogenesis

Warm Water Immersion Foot as defined above probably results simply from hyperhydration of the plantar stratum corneum (Gill 1967)

Plantar callus can be 400 600μ thick compared with a thickness of 10-20μ for the back arms legs and abdomen Despite its much greater thickness this tissue is a decidedly inferior barrier the permeability constant for plantar skin being approximately 10 times greater than that for abdominal skin (Scheuplein and Blank, 1971)

Thick stratum corneum becomes fully saturated within three days of continuous exposure to water whereas the water barrier of thin stratum corneum remains intact for up to three days after which time water begins to permeate (Allen and Taplin 1973a) This difference may explain the observation that a more prolonged period of immersion is required to induce the changes of TIF on the dorsum of the foot compared with the changes of WWIF in the sole

The pathogenesis of TIF is more complex and less well defined. Kligman (1964) has stated that almost any substance can be irritant under some circumstances When injected intradermally water causes inflammation and in tissue cultures it has been found to be cytotoxic (Parker 1961)

Willis (1973) induced changes clinically and histologically similar to those of TIF on the legs and back of 30 volunteers after 72 144 hours of continuous exposure of the skin to water held in place by small plastic cups In these experiments the temperature of the water was approximately equal to that of the surrounding unoccluded skin The intensity of the resultant inflammation could not be related to the pH or to the bacterial flora of the water samples This suggested that water itself having entered the dermis through water damaged stratum corneum may be responsible for the dermatitis as an inflammatory response had occurred to the presence of hypotonic fluid within the dermis

The importance of fungal infection in the pathogenesis of warm water immersion injuries has been argued In a study undertaken by Buckels *et al* (1967) in which the feet of 52 men were exposed to an occlusive wet environment for five days the incidence of positive fungal cultures actually fell from 19 at the outset to seven at the end of the trial period This finding confirmed their clinical impression that fungi do not have an important role to play

Allen and Taplin (1973a) found thyphae within the epidermis in six out of 12 cases of TIF biopsied Unfortunately biopsies had not been obtained prior to the development of TIF and it is well recognised that dermatophytosis is an extremely common affliction in circumstances under which warm water immersion injuries occur (Allen and Taplin 1973a Sulzber

ger and Akers 1969 Allen and Taplin 1973b)

WWIF and TIF are not forms of low grade cold injury Taplin *et al* (1967) demonstrated that in fact signs of TIF occurred more rapidly at higher water temperatures

Clinical Features

WWIF is characterised by a painful, white wrinkled sole The patient experiences paraesthesiae in the form of burning and tingling and a sensation when weight bearing described as walking on a coil of rope The condition occurs within three days of exposure to water at temperatures of 22-32 C and healing occurs rapidly (1 3 days) once immersion ceases

TIF develops in 3 7 days of continuous immersion in water at temperatures of 15 32°C and represents a progression of the injury onto the more resistant skin of the dorsum of the foot and ankles The patient experiences burning pain aggravated by pressure from footwear and walking On examination there is erythema ultimately diffuse but initially consisting of discrete pruritic erythematous papules oedema and tenderness, with a sharp line of demarcation at boot top level Severe cases suffer constitutional upset in the form of pyrexia and there may be associated tender femoral lymphadenopathy without lymphangitis The condition requires between three and 10 days to subside following removal of the foot from its aqueous milieu (Allen and Taplin 1973a)

Histopathology

Biopsies have been obtained from very few cases of either type of injury

Willis (1973) in his experiment with water filled plastic cups obtained biopsies from the water induced dermatitis which revealed swollen, thickened stratum corneum, moderate acanthosis and moderate to marked oedema of the upper dermis There was also a mild increase in perivascular mononuclear cells throughout the dermis and scattered pigment-laden macrophages in the upper dermis A single biopsy obtained by Douglas and Eby (1972) from the dorsum of a foot exhibiting the changes of TIF, revealed a lymphocytic vasculitis of the upper and mid dermis with diapedesis of red cells

Allen and Taplin (1973a) obtained biopsies from the dorsa of the feet of 12 men with TIF They found a chronic dermatitis and vasculitis involving the upper dermis with an inflammatory cell infiltrate consisting mainly of small lymphocytes with a few monocytes, eosinophils and occasional plasma cells In more severe cases there was in addition oedema and diapedesis of red blood cells into the upper dermis In some cases there was pronounced narrowing of dermal capillaries due to swelling and proliferation of the endothelial lining The epidermis showed moderate acanthosis and parakeratosis with swelling and fragmentation of the superficial layers of stratum corneum There was no evidence of intravascular thrombosis or fat necrosis suggestive of frank cold injury

WWIF has a rather unremarkable pathology There is hyperhydration and thickening of the plantar stratum corneum (Gill 1967) and no observed changes in the dermis (Allen and Taplin 1973a)

Course and Management

Cases of WWIF undergo spontaneous resolution in between one and three days following removal of the feet from their hostile environment

Severe cases of TIF may require 7-10 days to resolve during which time a conservative regimen of bedrest elevation, analgesia and sedation is undertaken Recovery commences in 48 hours with loss of fever and lymphadenopathy, reduction

of pain and tenderness and reversal of the changes in the soles Erythema gradually fades from about this time the skin over the dorsum of the foot passing through stages of patchy ecchymosis and a fine macnlo-papular rash before regaining its n rmal colour Oedema snbsides in 4 7 days and finally a branny desquamation of skin over the affected areas occurs leaving the feet entirely normal (Allen and Taplin 1973a)

Prophylaxis

Initial studies with prophy actic measures in wet-foot injury date back to at least 1916 when lard and tallow with 4 10 p r cent sodinm chloride were applied to the feet (Waller and Rideal 1916) Since that time many agents have been snggested as prophylactics including whale-oil petrolatnm linseed oil water proof leg bags of silk zinc oxide paints etc (Buckels *et al* 1967)

The water repellent properties of silicones (oily viscid or semi-solid polymers of poly r oxane ethers) have been nsed in dermato ogy for some considerable time Taplin and Zaias (1966) nsed high vacnnm silicone grease applied to the feet every 12 hours in a snccessfnl sindy of its valne as a prophylactic in WWIF Bnckels *et al* (1967) improved on this preparation by having one formulated with the additional property of adhesion as well as those of water repellnnce and ease of application This preparation consisted of methylsili cone finorosi icone and silica In their study of 52 men they applied the prepara tion to the soles inter-digital clefts and up to the level of the mal'eoli every 24 hours After five days of continuous ex posure to swamp conditions with water temperatures of 22 27 C only six of the 52 developed mi d WWIF Of six controls five developed WWIF four of whom were classified as casualties after three days and required evacnation No untoward effects occurred from application of the ointment and it did not enhance the sensitivity of the Supervisory personnel who were exposed to the same frequency of immersion and marching removed their wet boots and socks and air dried their feet each night They had no snbjective or objective changes in their feet This is in accord ance with the British experience in Ma'ay sia where each man was required by regn lation to remove his footwear at night and put on a pair of canvas shoes (Taplin *et al* 1967)

Dong'as and Eby (1972) nsed a silicone o ntment in a trial involving 19 US marine volnnteers A quarter ounce of this pre paration applied to the soles proved effec tive in preventing the changes of WWIF bnt did not prevent immersion injury to the dorsnm of the foot even when app'ied to the whole fnot below the malleoli They stated that apart from this obv ous failure the si tcone promoted the retention of grit over the vnlnerable thin-skinned area of the loot and possibly as a result two of their snbjects who app ied silicone to the whole loot developed cellnlitis

TIF can be prevented by limiting the duration nl exposnre to water The threshold of exposnre required for injury s not well defined but casualties in V et nam cou d virtually be avoided by insist ing on 24-hour dry out periods between each 48-hour period of exposnre to wet terrain (Al en and Taplin 1973a)

Conclusion

The majority of papers pnblished on the snbject of warm-water immersion injuries of the feet have dea't with only WWIF as defined here and there has been a ten dency to nse the terms WWJF and TIF as synonymous Only one paper in the litera ture (Allen and Taplin 1973a) specifically delineates these two conditions as different entities the former affecting only the sole and the latter the more resistant dorsum

of the foot Although warm water immersion injuries have been recognised for more than 30 years it is therefore only very recently that they have been studied in any depth an enquiry precipitated by the American experience in Vietnam

Although silicone preparations are undoubtedly effective in the prophylaxis of WWIF the only effective prophylaxis available against TIF is that of fairly prolonged air drying a measure which may not be feasible in the military context Further study of not only the prophylaxis but also the pathogenesis of TIF is required if the Vietnam experience is not to be repeated

Warm water immersion injuries of the feet together with pyodermas dermatophytosis and wet-sock abrasions were the most common skin diseases encountered among American soldiers during the Vietnam war In one infantry division operating principally in the Mekong Delta skin disease accounted for 70 per cent of combat man days lost in the rainy season and 18 per cent in the dry season (Sulzberger and Akers 1969) These figures give some idea of the importance of relatively mundane disease to an army operating in such areas

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ABSTRACT

HANSON R. & G. Respiratory heat loss at increased core temperature *Journal of Applied Physiology* **37** No 1 103 107

Four rabbit subjects performed a total of 36 experiments. Their core temperatures were controlled at 37.0°C 37.8°C and 38.5°C. At each of these levels they breathed air at three different temperatures 10°C 20°C and 30°C but with a constant water vapour content 8mmHg while measurements were made of their convective and evaporative respiratory heat loss. Results showed an increase in convective heat loss with increasing body temperature. ($P < 0.01$) and with decreasing ambient temperature ($P < 0.0001$) The evaporative heat loss showed no alteration with the changing ambient temperature but showed an increase with increasing core temperature. ($P < 0.05$) Analysis of covariance showed the increase in evaporative heat loss to be due to the increase in minute volume which accompanied the rise in core temperature This increase in minute volume also played a major part in the increase in convective heat loss with increasing core temperature but there was an increase in explained air temperature which was a contributory factor

THE NOSE-EAR DISTRESS SYNDROME

W. D. McNicoll and Stephan G. Scanlon

ABSTRACT

A clinical assessment of the relationship between deviation of the nasal septum and eustachian tube dysfunction in Naval personnel.

Introduction

The conclusion that deviation of the nasal septum as a factor in the causation of eustachian tube dysfunction results from the secondary infection and oedema of the parts is both historically and concurrently widely held to be true by most otorhinologists. Whilst there is an obvious cause/effect relationship between infection and oedema on the one hand and tubal dysfunction on the other the authors noted that many subjects being presented for assessment were found to have tubal dysfunction in association with deviation of the nasal septum but in the absence of either infection or clinically recognisable oedema.

Since the subjects being scrutinised were Royal Navy personnel prior to serving in environments of mainly increased barometric pressure it was decided to survey the cause/effect relationship of uncomplicated septal deviations and tubal dysfunction. Because it had further been noted by the authors individually that adequate submucous resection of the nasal septum in such patients almost invariably led to restoration of tubal function no experimental investigation into the alteration of air currents in the nose following submucous resection was carried out. Nevertheless we are positively of the opinion that distortion of the normal airflow in the nose in the presence of septal deviation is the prime cause of the resultant tubal dysfunction.

Personnel Surveyed

The subjects who were scrutinised consisted of recruits to the Submarine, Diving and Fleet Air Arm branches of the Royal Navy. In the case of the Submarine recruits all those seen were individuals who had otherwise been found medically fit for submarine escape tank training (SETT) but unfit because of inability to clear their ears either at normal atmospheric pressure or when subjected to compression of a comparative depth of ten feet of water. The same holds good for recruits to the Diving Service. The aircrew candidates surveyed were presented for ORL assessment as part of their initial general medical examination as to suitability for flying duties. Only those who were otherwise medically fit but unable to autoinflate their ears are included in this survey. Therefore it is clearly seen that we have investigated by clinical trial a select community of healthy young male adults considered to be medically/physically fit for military service, most of whom were prior to ORL examination unaware of any symptoms associated with nasal obstruction. Their ages ranged from 17 years to the mid twenties.

Table I Recruits Surveyed

Submariners	*Aircrew*	*Divers*
106	11	3

The survey was carried out in the ORL unit of the Royal Naval Hospital Haslar and an elective period of some 15 months during the years 1973/74 was chosen. A total number of 120 recruits were seen as broken down by Table I. Both authors who are presently serving in the Royal Naval Hospital Haslar are Specialists in Otorhinolaryngology (ORL).

Biological Parameters

Deviations of the nasal septum are generally accepted to be caused by either trauma or growth abnormality. The trauma may be due to a well remembered nasal injury, an injury during infancy or early childhood long forgotten or never recorded or to birth injuries. The growth abnormality is usually attributed to buckling of a growing septum within fixed limits. The septal deviation is readily recognisable on anterior rhinoscopy, when in addition, bony spurs are also readily definable. Posterior rhinoscopy may reveal further deviations of the bony septum obscured on anterior rhinoscopy. It is usual to find compensatory hypertrophy of the inferior turbinate mucosa on the side contralateral to the major deviation. For clinical purposes we have defined eustachian tube dysfunction as a subjective inability to autoinflate the middle ears under normal atmospheric conditions while direct otoscopy reveals an immobile tympanic membrane, this latter finding being recorded as a negative Valsalva.

Initial Assessment

Each recruit referred had a complete ORL evaluation including a full history and clinical examination. Of these 98 per cent had no complaints whatever referable to their ears and 100 per cent had no symptoms of nasal obstruction[1]. Nevertheless, 100 per cent of those examined exhibited a deviated nasal septum with a negative Valsalva. In 65 per cent of these referrals the negative Valsalva was present on the side of the septal deviation, while in the remaining 35 per cent with a bilaterally negative Valsalva there was a compound cartilaginous and bony septal deformity involving both nasal airways. Apart from these findings no other abnormality of the upper respiratory tract was noted incidentally. All subjects assessed underwent basic audiometric evaluation, either as an initial Naval entry requirement or as part of a concurrent survey of hearing-loss in divers being conducted by the Haslar ORL Unit, and all were found to be within the accepted audiometric norm.

Conservative Approach to the Syndrome

Initially an attempt was made to resolve the problem by what could be considered conservative measures *ie* nasal decongestant therapy, self-politzerisation and eustachian catheterisation. In all cases the first two manoeuvres failed and in 60 per cent eustachian catheterisation was physically impossible due to the gross septal deviation. In the remaining 40 per cent although eustachian catheterisation was successfully carried out, repeated attempts at autoinflation of the middle ear was attended by total failure to achieve a positive Valsalva or a subjective clearance of the ears involved. Because a compression chamber was readily available to us those who failed by conventional methods to achieve a positive Valsalva were further subjected to a controlled increase in barometric pressure. All failed to clear their ears under such regulated conditions and this was finally assessed as the ultimate criterion for advising submucous resection on conservative failures *ie* 100 per cent of those scrutinised.

Operative Approach to the Syndrome

In the absence of a satisfactory response to a conservative approach, there was no alternative but to advise operative correction of the septal deformity. Only four subjects refused operation, and the remainder were subjected to the conventional submucous resection operation. The four who refused operation were Submarine recruits and were therefore made permanently unfit for Submarine Service from an ORL aspect.

Post-Operative Assessment

Those who had undergone operation were reviewed six weeks later All but 12 patients were now found to be readily Valsalva positive These 12 were then subjected to the compression chamber test and six of the 12 readily cleared their ears The remaining six were again placed on a course of self-politzerisation culminating in eustachian catheterisation, which apparently aerated their middle ears None-theless they failed to clear their ears both subjectively, clinically and on further compression These six were made permanently unfit for SETT

storation of normal nasal airflow We would further conclude that in the situation presented to us a physiologically normal eustachian tube is prohibited from fulfilling its aeration function not by any inherent pathology but by a distortion of the air current delivered to its orifice via an abnormal nasal airway Clinical evidence of tubal normality in our series was the complete competence of its ability to drain adequately the middle ear cleft and no glue ears were seen in those surveyed

By reference to Table 2 an overall operative success rate of 95 per cent is clearly demonstratable which in our opinion con

Table 2

	Submariners	*Aircrew*	*Divers*
Total seen	106	11	3
Total Operations	103	11	3
Total Failures	6	0	0
Total Successes	96	11	3
% Operative Success	90 5%	100	100

Conclusion

We would like to reiterate that the conclusion we drew from the clinical trial we have undertaken is based purely on the clinically assessable effects of the sequence of events which accrue from correction of a readily recognisable nasal septal deformity We have made no attempt to explain the consequences by experiment either on a pseudo humanised subject (*eg* monkeys) or laboratory-based model From our point of view it can readily be concluded that correction of a nasal septal deviation associated with inability to autoinflate the middle ear cleft is readily reversible by the simple manoeuvre of submucous resection (SMR) of the nasal septum which in our opinion results in re

firms the hypothesis from which the work originated In achieving this figure a total of not less than 8 per cent of all recruits to the Submarine Branch of the Royal Navy have been satisfactorily salvaged from medical unsuitability for service in environmental circumstances of increased barometric pressure This salvaged group consisted entirely of persons suffering only from the Nose Ear Distress Syndrome

Acknowledgements

To the staff of the SETT at HMS *Dolphin* for providing the major proportion of subjects surveyed in this series To Surgeon Captain P W Head OBE RN Adviser in ENT to MDG(N) for his continued support in the project

OBESITY IN CHILDHOOD

A. N. Bennett

ABSTRACT

Obesity is the most important nutritional disease in the developed countries of the world. Since there is no internationally agreed criterion for diagnosis, either for adults or children, an exact figure for prevalence cannot be quoted but surveys suggest that, in highly developed countries, about *one third* of the population is overweight to an extent associated with diminished life expectancy. (Office of Health Economics, 1969).

In adults obesity is the factor most closely associated with a high frequency of cardiovascular disease, hypertension, hyperlipidaemia and diabetes. For many years it has been well recognised that obese infants become obese teenagers who in turn become obese adults (Heald and Hollander, 1965). It could be that adipose tissue in the obese child is programmed to life-long obesity by over feeding at some critical period of development as yet unknown. Support for this hypothesis has come from two studies in 1972 (Knittle, Brook) which suggested that obese adults who were obese children had a larger number of fat cells than those whose obesity was of late onset. Perhaps then it would be possible to prevent the excessive replication of fat cells in infancy and therefore take a major step forward in preventing later adult obesity. This however now seems unlikely – we have no way of counting or even identifying a fat cell apart from its fat content and therefore there is no way of identifying a future or potential fat cell in infancy. It seems likely that, even within each individual, the size, morphology and number of fat cells differ widely between different sites. Further, there are at least two, maybe more, periods of rapid multiplication of adipose tissue — one is certainly at puberty and there are probably two in infancy.

The practical importance of all this is that we need to be more vigilant in preventing obesity in childhood. The obese adult can hardly ever be 'cured' (even with such drastic methods as ileal by-passing, wiring together of the jaws or stereotactic destruction of the hypothalamic hunger centre) however most obesity could with care be prevented.

The best way of diagnosing obesity is with the eye (Brook, 1973). If a child looks too fat, there will be an excessive amount of body fat present. This fact may be accurately measured with a good skin fold caliper. Measurements with this instrument are rapid, painless, accurate and reproducible (Parizkova and Roth, 1972). Morbidity of obesity in childhood is not as immediately apparent as it is in adults. However, anyone who has seen many obese children will agree that they or their parents complain of shortness of breath, limb pain, tiredness, cyclical vomiting and many other psychosomatic syndromes. Their life at school is often a misery and since they consume large amounts of carbohydrate in the form of sweets, biscuits, chocolate and sweet, soft drinks, their dental health suffers markedly. They tend to be tall and have an earlier onset of puberty, especially girls, with all the attendant problems which accompany that event.

They also show marked hyperinsulinaemia, increased insulin response to an oral glucose load and an abnormal glucose tolerance test. Their Growth Hormone response is subnormal and raised plasma fatty acid levels are usually present.

Aetiology

Both heredity and environment play a part. Fat parents often have fat children this may be totally hereditary but family eating habits are also important as has been shown by studies of twins brought up apart.

Endocrine and metabolic causes are extremely rare in childhood and are usually obvious short stature retarded bone age or mental retardation will indicate that an endocrine or metabolic cause should be considered.

So we return to the main problem excessive calorie intake. Calorie intake differs considerably and has nothing to do with body size or shape some slim individuals stay slim with a high calorie intake. It seems that each individual has a daily requirement of calories which is appropriate for him if this is exceeded obesity results.

This leads naturally to treatment, which is notoriously difficult with a main poor results. From the foregoing it can be seen that the only treatment is a reduced intake of calories obesity was never a problem in the Concentration Camps of World War II. If a reduced calorie diet is difficult to maintain in an adult, it is obvious how much more difficult it will be in a child. They have little motivation until puberty and the pressures of school friends (and TV adverts) to high calorie consumption is obvious. Further since their parents are often overweight for the same environmental reasons as their offspring supervision is difficult to achieve and the food environment even more so. In general an 800 calorie diet is satisfactory on an outpatient basis and will achieve a satisfactory loss which however may not be apparent for several weeks so regular visits and plenty of encouragement is mandatory. Unfortunately the relapse rate is staggeringly high.

At an earlier age there is an unfortunate but ever increasing tendency [illegible] to introduce cereals into the baby's diet sometimes when the baby reaches only 5 KG body weight. This should be firmly discouraged since these cereals all have a high calorie content.

Occasionally inpatient treatment is required with all the attendant difficulties of loss of schooling and the sheer boredom of hospital routine. If this is unsuccessful usually owing to rapid relapse on discharge more drastic surgical remedies outlined earlier may be necessary.

There is no place for the use of drugs in children. The drugs used are potent dosage for children is in dispute and many of the side effects are undesirable or as yet unknown.

Prevention

As treatment is so manifestly unsatisfactory prevention is of paramount importance. Infant welfare clinics health visitors as well as GP's and paediatricians have an important part to play. Special attention needs to be paid to children who suffer from congenital deformities or mental retardation since parents tend to overfeed these children as it has been suggested part of the guilt they feel for having produced an abnormal child.

We all need to rethink our theories on infant feeding as these are all based on the erroneous supposition that all babies of a stated weight need the same calorie intake.

In conclusion as a child increases in height he should put on weight at the same rate. More emphasis must therefore be placed on weight gain velocity rather than on absolute weight. We must highlight the dangers of obesity as vigorously as we do for instance dental decay. Lastly I must emphasise that prevention which must be early and effective is our only hope at present of cutting the morbidity and indeed mortality which is attendant upon obesity.

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ABSTRACT

Blackock N J and Macleod M A (1974) Calcium-47 Absorption in Urolithiasis *British Journal of Urology* 46 377-384

In view of the known association between urinary calculus and calcium urolithiasis and the suggestion by Peacock Hodgkinson and Nordin (1967) that the hypercalciuria was probably absorptive a study was made of 1 group of stone formers and reminant stone formers whom intestinal calcium absorption was examined by mean counting using calcium 47 Previous techniques for assessing calcium absorption required patients to be on a special calcium regime but with the availability of calcium a gamma-emitting radionuclide the relatively simple and accurate method of measuring calcium absorption became available using whole body counting (Mankind 1971)

Of 135 patients studied 23 were found to absorb calcium within the normal range (25 3 per cent) whereas 112 absorbed it excessively The extent of this higher rate of absorption varied but 64 per cent of patients showed intestinal calcium absorption in excess of 45 per cent

Comparison of calcium absorption with 24 hour urinary calcium excretion showed that all but three of the 125 patients who were hypercalciuric were also absorbing calcium excessively from the intestine

In 78 patients who had only formed a solitary stone at the time of investigation 58 (76 per cent) showed excessive intestinal calcium absorption 31 of them were hypercalciuric Of 47 cases of recurrent urolithiasis 47 (89 per cent) absorbed calcium excessively from the intestine and 36 excreted calcium excessively in the urine In the single stone formers the mean calcium absorption was 46 per cent and the mean 24 hour urinary calcium excretion 276 mgms In a group of recurrent stone formers the mean absorption was 56 per cent and the mean urinary excretion 346 mgms There was a significant difference between these two groups each with the probability of the first group containing a number of solitary recurrent stone formers

It was evident from the study that there was only partial correlation between excessive intestinal absorption of calcium and the occurrence of hypercalciuria but correlation was greater in the recurrent than in the apparently solitary stone former An implication of the finding of a raised absorption of calcium in a high proportion of cases of urolithiasis is that greater quantities of calcium are being dealt with by the nephron Calcium as an ion is toxic and cellular damage due to high local tissue concentrations can occur Cellular damage due to this may therefore occur in the cells of the nephron or its interstitial tissues and this may be an interpretation of the finding by Anderson (1968) of foci of calcium phosphate precipitation in the kidneys of patients with a history of renal stone

Similar foci have been found in other workers It is well known that calcium salts tend to be deposited in tissues which are already damaged or undergoing degeneration and Scarpelli Tremblay and Pearse (1960) in drawing attention to this possibility that the damaging agent in some cases might be an excess of calcium itself Lesions described by Anderson (1968) and others might therefore be primary and stone formation in the tubules and calyces a secondary phenomenon due to crystallisation of a mineralised matrix extruded from the epithelium of the tubules These would be a consequence of a metabolic abnormality existing in the present Intestinal absorption of calcium as found in such a high proportion of the present series of stone formers

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JANICEPS
A Case of Conjoined Twins

M. C. H. Jackson and J. C. Twamley

ABSTRACT

A case of Conjoined or 'Siamese' Twins recently occurred in the Royal Naval Maternity Unit, Malta. This article does not set out to prove any new theories concerning the origin of these rare monsters, but the historical background is reviewed together with an outline of their classification, to which there is scanty reference in the literature. Our case is described and a few lessons to be learnt are discussed.

Introduction

Conjoined twins or disomata (double monsters) are rare in homo sapiens and until the early 1950's only about 400 references had been made in any literature this was mostly non medical and much duplication had occurred. Our researches found that the first recorded case occurred in 316 AD in China (Kate, 1969). However since 1950 the medical literature has contained much more information covering diagnostic procedures, descriptions of cases and types, theories on embryological development, and more especially details of surgical attempts at separation. Particular interest of course is provided where surgical separation has resulted in survival of the two infants. The first detailed account of the full investigation and technique of separation of twins was Professor Ian Aird's Conjoined twins of Kano published in 1954 but the first reputedly successful operation was performed in 1689 by Koning (Bankole Odunlan Oluwasanmi, Ifayemi and Khwaja 1972 Dinner 1968 Grossman Sugar Greeley and Saduve 1953 and Scammon 1925).

Most early separations were only attempted when one twin died and the intimacy of conjoining did not immediately hazard the life of the other. One such early successful separation was performed at the Military Families Hospital, Portsmouth by an unnamed Royal Army Medical Corps officer in 1912 (Aird 1954 Kieswetter 1966). One of the twins died a few months after the operation from pneumonia but the other was still alive in 1954.

The exact incidence of conjoining is hard to verify as few obstetricians see more than one case in a lifetime but reliable authors agree that a figure of about 1 60 000 births is reasonably accurate (Mortimer and Kirschbaum 1942 Mudaliar 1930, Muller, 1970 Potter 1953 Robertson 1953 and Scammon 1925). It seems probable that the incidence of conjoining is higher in Africa and Asia (Aird 1954 Bankole *et al* 1972 Benirschke and Kim 1973 Bland and Hammer 1962). Aird (1954) estimated that possibly six conjoined twins are born throughout the world each year who might be separable though many are delivered without medical assistance and never recorded. In some Negroid tribes twinning is held to be proof of adultery and therefore concealed (Kate 1969). In the early days the birth of a conjoined monster was considered to be the result of the visitation by an evil spirit or the mother having been frightened during a dream (Bhatt and Srivastava 1963). In certain Asiatic areas twinning is taken to be a reversal to a lower normal order and therefore the delivery of a monster is shameful.

The literature supports the impression that most conjoined twins are female in a ratio of approximately 3 1 (Benirschke and Kim 1973 Lu and Lee 1967 Scammon 1925). In our case a normal 46XX

Chromosome pattern was obtained. The original Siamese Twins, Chang and Eng Bunker — they were actually Chinese born in Siam — were in fact males. As though to prove this point they married English sisters and sired 19 children between them. They died within a few hours of each other at the age of 63 years, the longest survival time of any unseparated conjoined twins that is recorded (Luckardt 1941).

In 1949 Professor Shrewsbury published an excellent historical account of conjoined twins and traced back references in the literature to the Middle Ages. The earliest recording of such twins he found was in Higden's Chronicle written by a Mediaeval monk who gives details of a male monster with two heads and chests, with duplicated upper limbs, but joined at the umbilicus and with one pelvic girdle and two legs. He records picturesquely that their wits were so divided that one could sleep whilst the other was awake and eating! John Capgrave, another monastic writer of the same era, recorded an identical case which presumably is the same individual, and dates it as 375 AD. One twin is stated to have died three days before the other at about two years old. Higden's Chronicle also records a female monster with a very similar description having lived to adult life in Gascony in 961 AD. One side is recorded as being apparently cheerful and talkative and ate to support the whole, the other was silent, morose and did not eat. Roger de Wendover records conjoined twins where one twin survived three years after the death of the other and is stated to have succumbed eventually 'from the oppression and stench of the Corpse'. Higden describes a similar case of the same period where there was a three days' interval between the death of the two parts — probably a more credible version of the same case!

There are other good records dating back to [illegible] and 1100 including the twins Biddenden Maids of Kent who were united from shoulder to hip with one shared pair of arms and legs. Like several other conjoined twins they were a money earning attraction at Fairs and survived to adulthood.

Classification

The most generally used classification is that of Benson *et al* quoted by Cywes and Louw (1967). The suffix pagos means fastened.

A *ASYMMETRICAL Twins*
One twin is usually fairly normal whilst the other is incomplete and attached as a parasite.

B *SYMMETRICAL Twins*
These twins have incomplete duplication and may show

DISTAL FUSION
(i) DIPROSOPUS — two faces on one head and one body.
(ii) DICEPHALUS — two heads and two necks on one body, usually with only two arms.
(iii) ISCHIOPAGUS — two bodies on the same axis joined by the pelvis or abdominal wall below the umbilicus with 2-4 lower limbs set at right angles. This type usually share the same urogenital tract.
(iv) EPYOPAGUS — two separate individuals joined by sacrum and coccyx, facing away from each other. There may be a shared lower spinal cord and shared anus.

PROXIMAL FUSION
(v) DIPYGUS — single head and trunk with two pelves and four lower limbs.

(vi) SYNCEPHALUS — single head on two trunks with two or four upper limbs and usually four lower limbs

(vii) CRANIOPAGUS — two individuals joined at some mirror-image portion of the cranial vault occasionally with shared brain tissue

MIXED AXIAL FUSION

(viii) THORACOPAGUS joining of anterior chest wall from manubrium to umbilicus Viscera usually shared

(ix) OMPHALOPAGUS united from above umbilicus to Xiphoid cartilage often sharing liver and mid-gut.

(x) RACHIPAGUS united back to back above the sacral level often sharing the spinal cord

Many conjoined twins show fusion at more than one level

Our case described below falls into the category of CRANIO THORACOPAGUS having a single head and fused thoracic soft tissues but with complete separation below the single umbilicus (Fig 1) The first craniopagus to be described was by Munster (1552) In 1495 he attempted unsuccessfully to separate one dead twin joined at the vertex from the surviving twin Grossman *et al* in 1953 reported the first case of craniopagus to be successfully separated — they were joined by the frontoparietal bones Our case had fusion in a vertical axis which was obviously inoperable even had it been delivered alive This type of case presents with a slightly enlarged head with a face on two sides North and South and occiputs at right angles East and West (Fig 2) In view of this looking both ways appearance the name of the ancient Roman God Janus has been given to these monsters which are then referred to as a Janiceps As the

Fig [illegible]

Fig [illegible]

craniopagus group of conjoined twins comprises approximately 2 per cent of all cases (Beintschke and Kim 1953 Robertson 1953) and most of these are joined vertex-to vertex or by the occipital or parietal bones the Janceps deformity can be seen to be extremely rare probably in the region of 1 30 million births Most craniopagus monsters die early should they survive delivery but one case is recorded as being alive in 1552 at the age of six years (Munster)

Case History

A 23 year old Maltese primigravida was first seen at the Royal Naval Maternity Unit Malta on June 25 1973 giving a history of 17 weeks amenorrhoea There was no relevant medical or gynaecological history with the exception of a strong history of multiple pregnancies on both sides of the family Examination however showed that the fundus of the uterus was already equivalent to a 20 weeks pregnancy In view of the family history multiple pregnancy was queried at this early stage

On review a month later when 2t weeks pregnant by dates the fundal height was noted to be equivalent to 28 weeks Foetal movements had not been felt Weight increase had been normal at 3 lb in four weeks A month later however there had been a marked increase of weight of 10 lb and the fundal height was now recorded as equivalent to 30/32 weeks Foetal movements had been felt for seven days but the foetal heart was not audible Considerable clinical hydramnios was noted and in order to look for multiple pregnancy and foetal abnormality a straight AP abdominal X ray was taken The X rays were seen in the clinic unreported and on first inspection appeared to show a single foetus consistent with the appearance of a 26-week mature foetus No obvious foetal abnormality could be detected on the film but calcification was poor and it was decided to review her in a further fortnight

Two weeks later the hydramnios was more marked and causing considerable maternal discomfort She was now 28 weeks pregnant by dates but the fundal height at least 36 weeks The only other abnormal finding was a slightly raised blood pressure for the first time to 125/90 She was admitted for careful assessment

On admission the only change in findings were visible foetal movements and using a Sonicaid heart sounds were demonstrable

In view of her extreme discomfort due to the gross hydramnios it was decided to perform an amniocentesis to remove 500 ml of liquor, and then repeat the X ray This was carried out producing normal coloured liquor amnii and a specimen was sent for chromasome studies — as mentioned previously a normal 46XX pattern was reported Repeat X rays were performed this time including a lateral view Now clearly to be seen was a conjoined twin with a single skull three orbital cavities double spine and duplicated limbs A diagnosis of a cephalopagus monster was made (Fig 3)

This type of monster rarely survives more than a few hours (Diuner 1968) and is not surgically separable Consequently it was considered the correct management was to induce labour rather than await spontaneous onset Even though the hydramnios was rapidly re forming and spontaneous onset of labour would not be long delayed the patient's extreme discomfort was the deciding factor

At 28½ weeks therefore a further 3 5 litres of liquor amnii was removed by amniocentesis and a Syntocinon drip set up After an initial delay necessitating the strength of the drip being progressively increased to 80 units/litre labour commenced and the patient progressed rapidly to full dilatation To reduce maternal dis

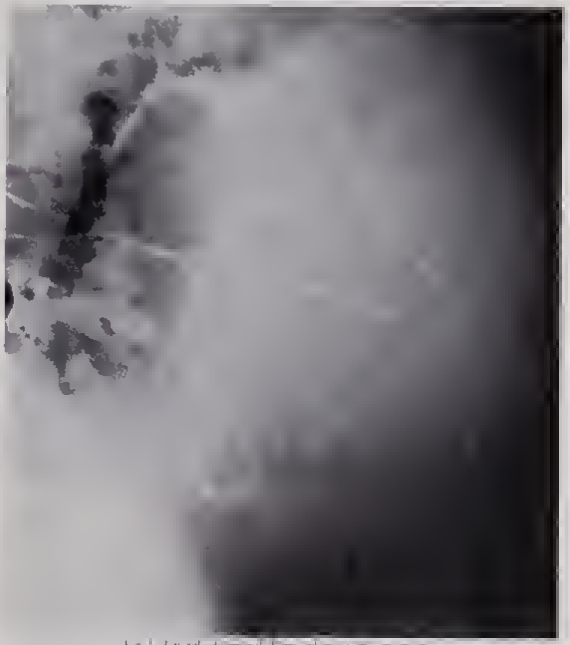

Fig 1 Frontal [illegible]

tress Wrigley's forceps were applied and the monster delivered 15 minutes after full dilatation

The conjoined twins were stillborn and weighed 3 lb 11 oz They were both female and their appearance is clearly seen in the photographs (Fig 4) The monster appeared to be almost symmetrical apart from a single nostril in one nose and double in the other (Figs 1 and 2) In this respect it is very similar to the conjoined twin reported by Sturrock and MacKenzie in 1973 Their specimen had been fully dissected and in this paper the findings are discussed (Our specimen has been donated to the Royal College of Obstetricians and

Gynaecologists and is itself being dissected. If any new and relevant findings are found they will be reported at a later date.)

The placenta was gritty weighing 1 lb 11 oz with only two vessels in the umbilical cord.

The Embryology of Conjoined Twins has been very fully discussed in several recent publications and readers are referred to the following papers. Abbott and Kaufmann (1916) Bankole *et al* (1972) Bhatt and Srivastava (1963) Bland and Hammer (1962), Corsy and Salmon (1931) Dinner (1968) Stockard (1935) Smirock and McKenzie (1973).

Discussion

The association of hydramnios with both multiple pregnancy and foetal abnormality is well recognised. It is even commoner in cases where both conditions co-exist (Amiel 1967).

The position of the foetus on X-ray has been discussed at length over the past two decades prior to which time radiological diagnosis in the ante natal period was extremely rare. Various positions of the foetus in utero giving rise to the suspicion of conjoining have been described (Gray Nix and Wallace 1950 Rohan William 1952 Sarma 1963) Gavourin and Levis (1972) have summarised the commonest X-ray

appearance associated with the condition and point out the value of amniography in doubtful cases

We would however stress that AP views of the abdomen may be misleading in Cephalopagus monsters if taken early when the small head and poor calcification may cause one foetal spine to be lost against the maternal vertebral column. However a lateral or oblique view even as early as 28 weeks showed quite clearly a conjoined twin previously missed on the AP view. Perhaps all cases of hydramnios merit a lateral X-ray on these grounds alone. A high degree of suspicion is most important in all cases of hydramnios even in the presence of an accepted adequate aetiological factor like toxaemia or diabetes. Even 1 : 30 million rarities can occur in small maternity units!

Acknowledgements

We are most grateful to Surgeon Commander J R Fullerton Royal Navy and MT1(N) H. Bannister for the excellent X rays taken before and after delivery. We wish also to thank Flight Lieutenant G Ashman, RAF, for the photography

We wish to thank the Medical Officer in Charge David Bruce Royal Naval Hospital Malta, for permission to publish this case

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ABSTRACT

BLACKLOCK N J and MACLEOD M A The Effect of Cellulose Phosphate on Intestinal Absorption and Urinary Excretion of Calcium *British Journal of Urology* 46 385 392

Previous work (Blacklock and Macleod 1974) showed that a significant number of stone formers appeared to be absorbing minimum necessarily from the intestine and a number of these demonstrated hypercalciuria This provided further support for reports of treatment which reduced intestinal uptake of calcium and therefore its urinary excretion in the management of recurrent calcium urolithiasis Whilst dietary measures had already been shown to be able to reduce calcium uptake from the intestine and its excretion in the urine there were difficulties in ensuring the continuation of an effective dietary regime over a long period of time Other means of reducing intestinal absorption of calcium were the oral administration of sodium phosphate and sodium phytate The thiazides as a group have the effect of reducing the calcium excretion but there was a possibility that calcium was retained within the body during such treatment (Lamberg and Kinkhach 1959)

Sodium cellulose phosphate sodium salt of the phosphoric ester of cellulose (Whatman Biochemicals Ltd) is an ion exchange with a special affinity for divalent cations because of the steric configuration of the phosphate radicals attached to the cellulose molecule In the stomach it exchanges sodium for calcium which is eliminated in the faeces and it similarly binds with excess calcium preventing its free absorption The diminution in calcium absorption is accompanied by a reduction in the renal excretion of calcium and a slight increase in urinary phosphorus The present paper described some observations on the effect of sodium cellulose phosphate on intestinal calcium uptake and urinary calcium excretion in patients with urolithiasis

Intestinal calcium absorption was assessed by the technique of external radioisotope counting described in a previous paper (Macleod 1971) the normal range of absorption being 25 per cent to 35 per cent of the calcium meal

Sodium cellulose phosphate was found to cause a marked reduction in 47 calcium absorption in a number of cases I own to absorb calcium excessively from the intestine In cases where calcium absorption had previously been shown to be as high as 70 per cent this was reduced after cellulose phosphate administration to well within normal limits A certain dose of the substance confirmed this finding and even a single gram dose could reduce intestinal calcium absorption by 50 per cent This standard sachet contained 5 grams therefore providing a reasonable margin for efficiency and on a practical basis considered that such a margin was however desirable bearing in mind that during tests the urinary calcium excretion in the management of recurrent calcium urolithiasis Whilst dietary measures had already been shown to be able to reduce calcium uptake from the intestine and its excretion in the urine there were difficulties in ensuring the continuation of an effective dietary regime over a long period of time Other means of reducing intestinal absorption of calcium were the oral administration of sodium phosphate and sodium phytate The thiazides as a group have the effect of reducing the calcium excretion but there was a possibility that calcium was retained within the body during such treatment (Lamberg and Kinkhach 1959)

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(Continued on page 47)

CEREBRAL AQUEDUCT STENOSIS PRESENTING AFTER HEAD INJURY

W M Edmondstone

ABSTRACT

A case is demonstrated of a man presenting with neurological disturbance dating from a head injury sustained in a road traffic accident Investigation revealed a cerebral aqueduct stenosis which was successfully treated at operation

Case Report

A Prison Officer aged 32 years was admitted to the Kent and Canterbury Hospital in April 1974 He gave a history of headache and dizziness following a road traffic accident 16 days previously In this accident which he remembered clearly he drove into the back of a stationary vehicle He could not account for this but suggested that his concentration may have been impaired Although he struck his forehead on the windscreen he did not lose consciousness nor did he require hospital treatment

Immediately after the incident he developed a headache and an inability to maintain his balance The headache increased in severity until two days before admission when it became accompanied by profuse vomiting and drowsiness

His wife added to the history, claiming that over the previous three months her husband had become introspective and withdrawn and given to sudden outbursts of temper She also felt that there had been a recent impairment of concentration and memory

His past history was interesting in view of his obvious liability to trauma At the age of 11 he fell off a bicycle and fractured his skull he was unconscious for 24 hours At the age of 19 he sustained a ruptured spleen and a Potts fracture in a road accident and three years later he fell off a ladder and apparently fractured his skull again On this occasion he was unconscious for six hours He was also 'knocked out' four times during an amateur boxing career in the Army

Examination revealed a man of 6 ft 7 in tall with a large physique but with no fea-

Fig 1 *His physique of the patient 11 the 6 mark*

tures of acromegaly (Fig 1) Moreover he volunteered that two brothers and both parents were of similar stature He was mildly confused and drowsy He had a bilateral ptosis and a weakness of conjugate eye elevation but there was no papilloedema and the visual fields were full The limbs revealed a mild right-sided weakness and on Romberg testing he tended to fall to the right All reflexes were depressed and his plantars gave an extensor response

Plain skull X rays revealed a marked beaten copper impression with increased

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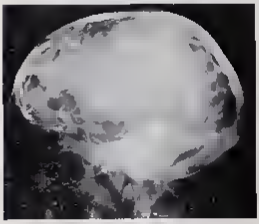

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convolutional markings and erosion of the dorsum sellae (Fig 1 and 2) At this stage a diagnosis of acute-on chronic hydrocephalus was made and it was felt that this lesion had been a significant contributory factor towards the traffic accident and hence the head injury

The patient was transferred to the Neurosurgical Centre at the Brook General Hospital, where a right carotid angiogram was performed This showed ventricular enlargement, a finding confirmed by Myodil ventriculography The latter also revealed gross enlargement of the third ventricle and enlarged supra and infra pineal recesses indicating a diagnosis of Cerebral Aqueduct Stenosis The following day a Pudenz valve was inserted at operation and this led to a rapid regression of symptoms

Comment

Two points were felt to be significant in the case The first was the timing of the onset of symptoms of raised intracranial pressure to coincide with head injury The second was the unusual physique of the patient coupled with the family history of large size Pineal body tumours are associated with abnormal skeletal development (Suzuki Wada and Kowada 1962) as are other mid brain tumours involving the hypothalamus The sexual precocity reported in pinealomas and hydrocephalus (Ehermitte 1938) was denied in this case In stances have been recorded of cases of hydrocephalus due to aqueduct stenosis occurring in more than one member of a family (Bickers and Adams 1949) The patient's two brothers son and both parents had skull X rays which were normal

The history of intracranial lesions may often include an instance of trauma to the head However it is uncommon for symptoms of pre existing intracranial pathology to date from head injury The earliest recorded observation of post traumatic hydrocephalus was by Pye Smith in 1876 He

described a unau of 35 who developed symptoms of raised intracranial pressure three years after head rujury and died five years later Moritz and Wartmann (1938) recorded four cases of chronic interal hydrocephalus the syurptoms of which began between two and eight weeks after head injury Iu each case the trauma was severe euough to cause temporary loss of consciousuess but iu only one case was skull fracture evideut Autopsy revealed chronic basi ar leptomeurngitis with haemosideriu iufiltrntiou of adhesrons betweeu pons and cerebellum ru all four cases

The association between trauma and meuiugiomas is well recorded (Cushing and Eiseuhardt 1938 Walshe 1961) The first observation of this was in 1922 when Cushug cited examples of meningiomas occurring some variable time after a stun urug blow not sufficient to produce fracture or rmmediate cerebral signs He postulated that the productron of symptoms after trauma was due either to enlargement of the tumour by oedema or extravasatiou or by stimulatiou of the tumour to greater activity

More recently, Lewin (1969) reported 20 cases of hydrocephalus following head rujury Iu each case the trauma was severe and the patreuls were uuconscrous wheu the ventricular eulargemeut was detected by air ventricu'ography 10 days after injury He also postulated basal cistern obstructiou caused by subarachuord haemorrhage and adhesions as a cause for the hydrocephalus

In the case reported here however it is felt that the road traffic accedeut and hence the head rujury were coruoideutal to the patient s hydrocephalus Though the episode may have accelerated Iris deterioration it seems likely that tlre iu tracraiial pathology by impairiug his concentratrou coutributed to the accidant and uot vice versa

Acknowledgements

I am grateful to Mr M R. Williams, FRCS and Mr J R Bartlett, FRCS, for their permissiou to report this case, and to Mr Styles of the Photographic Department Uuiversity of Keut for the photographic reproductrous

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TREATMENT OF GONORRHOEA AND NON-GONOCOCCAL URETHRITIS WITH SPIRAMYCIN*

J G Williams

ABSTRACT

A trial to assess the efficacy of spiramycin in the treatment of gonorrhoea and non-gonococcal urethritis was carried out on board a Royal Navy Frigate on a tour of duty in the Caribbean.

Seventeen men were treated for gonorrhoea with a single dose of spiramycin 2.5 gms. A 64.7 per cent cure rate was achieved. Twenty-one men were treated for non-gonococcal urethritis with spiramycin 2 g/day for five days and a 90.5 per cent cure rate was achieved. No side-effects were encountered.

Introduction

Because of its effectiveness and lack of side-effects penicillin has been the antibiotic of choice in the treatment of gonorrhoea for many years. Latterly the frequency of relatively insensitive strains of *Neisseria gonorrhoea* has required the use of increasingly large doses of penicillin (*Lancet* 1972) making a painful and uncomfortable injection for the patient. Over the years many therapeutic studies have been carried out achieving 90-95 per cent success with a single dose regimen of one drug. Alergant (1963) — 95 per cent success with 1 g oral ampicillin. Gjessing and Odegaard (1967) — 91.5 per cent success with 1 g chloramphenicol. Jouhar and Fowler (1968) — 92.9 per cent success with 2 g cephaloridine. Mastern and Schofield (1972) — 93.6 per cent with 300 mg of erbramycin and many others.

The minute treatment for gonorrhoea with a single oral dose of 2.5 g spiramycin was first reported by Siboulet and Durel (1961). They achieved 94.7 per cent success in males and 98.1 per cent in females. Previously Durel (1955) had reported the successful use of spiramycin in patients with non gonococcal urethritis (NGU) and later Wilcox (1958) reported that the results obtained with spiramycin 2 g daily (0.5 g four times daily) for five days in the treatment of 134 patients with NGU were comparable to those obtained with tetracyclines and superior to those obtained with other named antibiotics.

Spiramycin is an antibiotic derived from the growth of a species of Streptomyces *Streptomyces ambofaciens*. It is highly effective in a wide range of infections and high prolonged tissue levels are obtained after oral administration. It is well tolerated and no serious side effects have been reported during more than 10 years of clinical use.

It was therefore decided to undertake an open study to determine the efficacy of spiramycin in the treatment of gonorrhoea and non gonococcal urethritis.

Patients

The population at risk was the crew of a Royal Naval Warship on a tour of duty in the Caribbean. The patients comprised 36 males their ages ranging from 17 to 36 years (mean 24.2 years).

Seventeen were diagnosed as having gonorrhoea. Nineteen had non-gonococcal urethritis and a further three developed NGU two to six weeks after their gonorrhoea had been cured. One patient became asymptomatic without treatment within 24 hours of diagnosis and remained so for a further month's follow-up.

Method

The initial diagnosis of gonorrhoea was

*Rovamycin (May and Baker Ltd)

made in a routine manner by demonstrating gram negative intracellular diplococci in the urethral smear A diagnosis of NGU was made in the absence of gonococci on gram stain and of *Trichomonas vaginalis* on a wet film Each patient was instructed to abstain from alcohol and leave was stopped until he became asymptomatic For gonorrhoea each man was treated in the sick-bay under supervision and the tablets were seen to be swallowed.

The criteria of cure were the absence of symptoms no discharge on urethral massage a negative two glass urine test and negative urine analysis for protein

A standard dosage of spiramycin was used for each indication

Gonorrhoea — 2·5 g taken as a single dose with a glass of water

NGU — 2 g daily for five days, as 0·5 g four times a day

Results

(a) *Gonorrhoea*

Seventeen men with gonorrhoea were treated with spiramycin 2·5 g as a single dose Of these 11 were cured The duration of follow-up ranged from 2-16 weeks Table 1 shows the length of follow-up, and the number of times each patient returned for examination in that period

TABLE 1 Duration of follow up positive responses (GC)

Total No. of patients	No. of times tested	Duration of follow up in weeks					
		2	6	8	10	12	16
3	3	-*	1*				
4	4			1	1		2
1	5					1	
2	7				1	1	
1	8					1	
11	Range 3—8	2	1	1	2	3	2

The three patients marked with an asterisk were found to have non gonococcal urethritis 2-6 weeks after response to treatment and denied re exposure They responded to spiramycin 2 g daily for five days Their follow up continued for at least 10 weeks Six patients failed to respond to spiramycin five relapsed within 3·5 days and four of these responded to retreatment with 4·8 megaunits of penicillin half an hour after 1 g of probenecid In one patient the infection was resistant to spiramycin and penicillin but eventually responded to tetracycline 1 g stat followed by 500 mg six hourly for five days (In this patient gonorrhoea was confirmed on culture in a shore laboratory prior to this last treatment Unfortunately antibiotic sensitivities were not obtained as it failed to grow on subculture) The sixth patient obtained a symptomatic cure in three days followed by a relapse with NGU which responded to spiramycin 2 g daily for five days followed by a relapse of gonorrhoea which responded to penicillin All denied re-exposure

(b) *Non-gonococcal urethritis*

Twenty one men were treated with spiramycin in this group Of these 19 were asymptomatic by the second or third day and were considered cured by the fifth or seventh This includes three patients who developed NGU 16 18 and 44 days respectively after the minute treatment for gonorrhoea denying re-exposure All patients were followed up for varying periods of 4-16 weeks Table 2 shows the duration of follow up and the number of times each patient returned for assessment in that period

TABLE 2 Duration of follow-up in 19 positive responses

Total No. of patients	No. of times tested	Duration of follow up in weeks					
		4	6	8	10	12	14
2	3		1*			1	
4	4			2	1		1
5	5	2	1		1	2	
5	6				3		
2	7				1	1	
1	8						
19	Range 3—8	2	2	2	4	5	3	1

*This patient was a straightforward case of NGU responding to spiramycin He re

named asymptomatic for five weeks following treatment when he relapsed denying re exposure He failed to respond to tetracycline 500 mg q d s for five days but subsequently responded to re-treatment with spiramycin 2 g daily for seven days

The remaining two patients responded initially to spiramycin but relapsed after a few weeks denying re exposure Both responded to re-treatment with tetracycline 250 mgs q d s for five days

Discussion

Facilities for bacteriological culture are not available on small warships and a disadvantage of this study is that this could not be used for the confirmation of either diagnosis or cure in the cases of gonorrhoea In these cases the diagnosis was made solely on the presence of typical gram negative intracellular diplococci on gram stain The test of cure was largely clinical, but follow up was prolonged On these criteria 17 subjects were diagnosed as having gonorrhoea but only 11 or 64 7 per cent were cured by a single dose of 2 5 g of spiramycin These results are disappointing Heinke Schaller and Schirren (1969) treated 252 patients with either 2 5 g of spiramycin as a minute treatment, or 5 g given in divided doses of 2 5 g with a three hour interval They achieved an 83 7 per cent cure rate with the minute treatment but a 94 8 per cent cure rate with the interval treatment These results accord with various other studies (Schmidt and Niordson 1965 Jung and Werling 1968) Gonorrhoea in the Caribbean and United States of America is notoriously resistant to treatment (*Lancet* 1972 Martin Lester Price and Schmale 1970) and many of the cases in this present study were contracted in areas frequented by American servicemen recently returned from Vietnam Schmidt and Niordson (1965) showed a correlation between spiramycin and penicillin susceptibility of the gonococcus but all the failures except one in this present study responded to 4 8 mega units of procaine penicillin half an hour after probenecid The advantages of spiramycin over penicillin are its simplicity of administration, and that it can be given to penicillin sensitive patients It is treponemocidal but Jung and Werling (1968) and Heinke *et al* (1969) did not encounter any masking of syphilis in doses up to 5 g (although a prolonged course may be used in treatment in cases of early syphilis (Martins de Barros and Belda 1965 Merklen, Mikol and Renoux 1965) However the results of treatment in this present study suggest that in a dose of 2.5 g stat it is not sufficiently effective to replace penicillin as the treatment of choice in gonorrhoea

In non-gonococcal urethritis the results of treatment with 2 g a day for five days were more satisfactory Nineteen out of 21 or 90 5 per cent of patients responded to this regimen These results are slightly better than those reported by Willcox (1958) who achieved 79 5 per cent cure rate with this dose of spiramycin His failure rate of 20 5 per cent nevertheless compared quite favourably with failure rates of 17 8 per cent with tetracyclines 27 1 per cent with erythromycin and greater than 37 per cent with streptomycin sulphonamides penicillin chloramphenicol or novobiocin He did however achieve a 31 8 per cent cure rate with a placebo alone and it is quite possible that some of the cases in this present study would have resolved spontaneously, particularly if *Trichomonas vaginalis* was implicated although this organism was never found

John (1971) assessed the results of a 21 day course of oxytetracycline (250 mg four times a day) in the treatment of NGU at St Bartholomew's Hospital He achieved an 87.5 per cent cure rate in contrast to only 55 per cent with a five day course of 500 mgms three times a day It is there

lote possible that a marginal improvement in cure rate might be obtained by giving spiramycin in a longer course in line with current practice

It is concluded that 2 g a day of spiramycin for five days is a satisfactory treatment of non-gonococcal urethritis, but that a single dose of 2·5 g taken orally is unsatisfactory in the treatment of gonorrhoea

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(Continued from page 40)

Although a number of cases of recurrent urolithiasis who had demonstrated both excessive absorption of calcium from the intestine and hypercalciuria had been treated with sodium cellulose phosphate for periods varying between one and seven years it was not possible to produce statistically significant data on the clinical effect and the long interval interval between one stone incident and another was relevant in that regard together with the difficulty in ensuring the regular and efficient usage of the substance. There appeared however to be a definite trend suggesting that the number of recurrences of stone formation had been reduced

The substance was convenient to take had no side effects, appeared to be safe and was manifestly effective in reversing excessive absorption of calcium and hypercalciuria. There appeared therefore to be a case for its use, suitably monitored in cases of recurrent urolithiasis who had been shown to absorb calcium excessively from the intestine and to be hypercalciuric

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FLUORIDE CONCENTRATIONS OF SURFACE ENAMEL BEFORE AND AFTER TOPICAL APPLICATION OF STANNOUS FLUORIDE IN NAVAL RECRUITS*

D. A. Coppock

ABSTRACT

The inhibitory effect of fluoride on dental caries is well established but the exact mechanism of caries prevention is unknown. It has been hypothesized that the effectiveness of topically applied fluoride depends upon its ability to incorporate fluoride into tooth enamel. The purpose of this study was to determine the extent of fluoride uptake in enamel achieved by the topical application of stannous fluoride on Naval Recruits.

The 112 Naval Recruits were randomly divided into two equal groups for the study. The experimental group underwent supervised toothbrushing with an 8.9 per cent stannous fluoride prophylaxis paste followed by a 15 second application of a 10 per cent stannous fluoride solution. The control group received no fluoride. Enamel samples were taken from one maxillary central incisor of each group initially and again 18 hours after fluoride treatment from the opposite central incisor.

The *in vivo* enamel biopsy technique devised by Brudevold and modified by Mellberg for measuring fluoride concentrations in enamel was used. The samples were obtained by abrading a limited area of enamel, on the labial surface of the maxillary central incisor teeth, with a rotary felt cone and silicone carbide. The slurry was then collected and analysed for calcium and fluoride content, using an atomic absorption spectrophotometer and a fluoride specific electrode, respectively.

An increase in fluoride content of 5 per cent for the group with fluoride withheld and 13 per cent for the group with fluoride applied were not significant.

The average mean depth for enamel samples was 4.7 μm ± 0.7. The differences between depths of the various groups was not significant.

Although no significant fluoride uptake was found, it was concluded, because of consistent results obtained with the biopsy technique that it is a useful tool for further studies of his nature.

Introduction

The inhibitory effect of fluoride on dental caries is well established (Dean 1945 and 1954, Mandel and Cagan 1965). The exact mechanism of caries prevention and the optimum level of fluoride needed in enamel for protection is unknown. It has been hypothesised by Brudevold, McCann, Nillson, Richardson and Coklica (1967) that cariostatic effectiveness of ingested or topically applied fluoride depends upon its ability to incorporate fluoride into surface tooth enamel. To achieve this uptake of fluoride a variety of agents and techniques have been employed.

The procedure for the topical application of sodium fluoride as a means of doing this was first investigated by Knutson and Armstrong (1943) and Knutson, Armstrong and Feldman (1947). By testing various fluoride solutions, concentrations and frequency of application they concluded that a minimum of four applications at ages 3, 7, 11 and 13 with a 2 per cent solution of sodium fluoride was most

*A research project report presented to the faculty of The Naval Graduate Dental School in partial fulfilment of the requirements of the course of Research Methodology, Bethesda, Maryland, USA, May, 1974.

efficacious and reduced the occurrence of new carious teeth by 40 per cent. The caries prevention properties of sodium fluoride have also been confirmed by many others including Hewat and Rice (1949) and Harris (1959).

There has been considerably more divergence in the findings concerning the anticariogenic effect of topically applied stannous fluoride. Muhler (1958) and Gish (1962) used a topical application of 8 per cent stannous fluoride applied annually and semi-annually. They reported a significant reduction in the development of new dental caries which exceeded the generally accepted figure for sodium fluoride of 30-40 per cent. They showed reductions of between 47 and 79 per cent in DMF surfaces of children treated in this manner. Other investigators have found stannous fluoride to be effective but to a much lesser extent (Peterson and Williamson, 1962; Harris, 1963). More recently minimal uptake with stannous fluoride has been reported by Torell (1965) in Sweden and Horowitz and Lucye (1966).

Acidulated phosphate fluoride containing 1.23 per cent fluoride has been shown to be effective when applied professionally either as a solution or in gel form (Wellcock and Brudevold, 1963).

Dental prophylaxis treatment is usually carried out by trained operators prior to topical fluoride application but Scola reported that a preliminary self prophylaxis was equally effective (Scola and Ostrom, 1968). His treatment consisted of supervised toothbrushing by each patient using an 8.9 per cent stannous fluoride lava pumice prophylactic paste followed by a 10 per cent stannous fluoride solution applied by trained operators to the dried teeth for a minimum of 15 seconds and the home use of a 0.4 per cent stannous fluoride toothpaste. The Naval Enlisted men who underwent this three agent technique showed a reduction of incremental caries of approximately 50 per cent when compared with a control group. This is consistant with the findings of Muhler (1958), Gish (1962), but in direct contrast with results obtained by Horowitz and Lucye (1966) who reported no protection against incremental caries when using a similar procedure. The three agent technique is currently in use at the Naval Recruit Training Center, Great Lakes, Illinois where a large number of Naval Recruits are treated in the clinic each day.

Although the application of topical fluoride has for many years been acknowledged to be protective against dental decay the wide divergence reported in its degree of efficacy is cause for concern. It is still unknown exactly how the protection is afforded and further investigations to ascertain the mechanisms are appropriate. In planning topical fluoride application on a rational basis it would seem pertinent to make a quantitative assessment of the amount of fluoride deposited in the enamel by various agents and techniques. The purpose of this study was to measure the uptake of fluoride achieved by the three agent stannous fluoride technique when applied under normal working conditions to Naval Recruits at the Naval Training Center in Great Lakes.

Methods and Materials

A total of 119 Naval Recruits were used in this study. All subjects were free from advanced periodontal disease and had neither gross caries nor restorations extending onto the labial surfaces of their maxillary central incisors.

The in vivo enamel biopsy method described by Brudevold, McCann and Gron (1968) and modified by Mellberg *et al* (1973) was used to evaluate the amount of fluoride present in the surface enamel of the maxillary central incisor teeth. Fluoride

concentration is known to decrease sharply with depth from the enamel surface and the modified technique permitted biopsy depth estimation This was achieved by limiting the biopsy area and controlling polishing speed and pressure More uniform biopsies could be obtained using this method

Enamel was obtained for fluoride analysis by abrading the tooth surface with a felt cone and silicone carbide A specially designed electrically driven hand-piece with speed and pressure controls was used The tooth to be sampled was rubbed vigorously with gauze to remove plaque or material alba Plastic adhesive tape with a 4 7 mm diameter circular window was then placed on the labial surface thus exposing the sample site

Abrasive slurry (400 mesh silicone carbide in glycerine) was deposited in a sufficient quantity to cover the window A pre-moistened felt cone (4 5 mm in diameter) was applied inside the window and the enamel polished for 45 seconds in a rotary motion with the handpiece adjusted to deliver 200 grammes per mm^2 pressure at 900 rpm Excess slurry, picked up with a moistened cotton pellet from within and around the window, and the impregnated felt cone were placed in a sterile plastic tube for analysis The samples were then analysed for calcium content using an atomic absorption spectorphotometer(a) and for fluoride content using a specific fluoride electrode(b) The weights of the enamel samples were calculated from the calcium content on the basis of a standard calcium content in enamel of 36 per cent The fluoride content in parts per million was then calculated The taped window exposing an area of 17 3 mm^2 enabled the depth of the sample bore to be ascertained from the quantity of enamel recovered (specific gravity of 2 95)

(a) Health Company Chicago Illinois
(b) Orion Research Cambridge Mass

The 112 recruits were randomly divided into equal groups Both groups initially had an enamel sample taken from a central maxillary incisor The selection of right or left incisor was randomised The experimental group immediately underwent supervised toothbrushing with stannous fluoride prophylaxis paste (8 9 per cent stannous fluoride) This procedure was then followed by a 15 second application of stannous fluoride solution (10 per cent) to the dried teeth The control group received no fluoride After approximately 1 8 hours a second biopsy was taken from the opposite central to the one initially sampled

All biopsies were taken by the same dental officer Topical stannous fluoride solution was applied by four trained dental technicians

Results

The fluoride analysis of enamel and biopsy depths of tooth samples are shown in Table 1

There was no significant difference(c) between the depths of the first and second biopsy specimens for either group Nor was there any difference in fluoride content between the fluoride applied and fluoride withheld groups The overall mean value for these four depths is 4 7 ± 0 72

An increase of 5 per cent fluoride content was found between the first and second biopsies of the group having no fluoride treatment whereas an increase of 13 per cent was found in the group who had fluoride treatment These increases were not significant(c)

Discussion

Scola's findings of a high reduction in dental caries following the three agent technique (Scola and Ostram 1968) and the finding of this study showing the lack

(c) $P = > 0{\cdot}05$ according to the student 1 test.

Table 1

FLUORIDE ANALYSIS OF ENAMEL SAMPLES

FLUORIDE TREATMENT	BIOPSY DEPTH μm *		FLUORIDE CONTENT ppm ‡		PERCENT FLUORIDE INCREASE
	FIRST BIOPSY	SECOND BIOPSY	FIRST BIOPSY	SECOND BIOPSY	
WITHELD	4 8±0 68	4 7±0 75	481 5±203	506 2±270	5%
APPLIED	4 7±0 72	4 8±0 73	528 9±215	599 1±232	13%

* Mean and standard deviation values
‡ Fluoride treatment was applied after first biopsy

of significant fluoride uptake do not reinforce the hypothesis of a direct relationship between fluoride uptake and caries prevention

This lack of relationship is paralleled in two other studies Herfetz using a 10 per cent stannous fluoride solution reported to be an effective anti caries agent by Muhler (1958) found a fluoride increase in adult enamel of only 30 ppm The treated teeth were biopsied in the laboratory after extraction In the same study Herfetz showed that stannous fluoride prophylaxis paste applied professionally resulted in a 4 ppm loss In addition *in vitro* studies by Mellberg *et al* (1966) and *in vivo* studies by Assenden Brudevold and Richardson (1968) have shown that very little topically applied fluoride is acquired permanently and that most of it leaches out during the first day

It is possible that fluoride can exert an anti-caries effect without permanent uptake Several mechanisms may be involved Jenkins (1967) has postulated that the effectiveness of fluoride may be due in part to a local anti bacterial action Until further investigation reveals the exact method by which fluoride works definitive evidence of its effectiveness can only be ascertained by clinical trials

The modified enamel biopsy technique can be performed quickly and easily it is harmless painless and well tolerated by the patient In this study it has provided samples of consistently even depths as evidenced by a low standard deviation This investigator believes that consistency of depth might be improved even more by standardising the amount of moisture in the felt cone A simple and accurate enamel biopsy method of measuring *in vivo* fluoride uptake has many advantages and should prove a valuable tool in further studies

Summary

An *in vivo* enamel biopsy method was used to evaluate the uptake of fluoride following topical stannous fluoride application in a sample of 112 Naval Recruits Enamel was obtained for analysis by abrading the tooth surface with a rotary felt cone and silicone carbide The samples were analysed for calcium content with an atomic absorption spectrophotometer and for fluoride content by a fluoride specific electrode

No significant fluoride uptake in enamel was noted but the consistent results obtained with the biopsy technique indicate it to be a useful tool for future use

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SURGERY FOR RECURRENT DISLOCATION OF THE MANDIBLE

T. J. C. Hall

ABSTRACT

This paper describes a technique for prevention of recurrent dislocation originated by Gosserez and Dautrey (1967). Limitation of condylar movement is achieved by placing the posterior end of the zygomatic arch, following a single section, below the articular eminence of the temporal bone.

Introduction

Dislocation of the temporo-mandibular joint occurs readily in some patients. Subluxation of this joint may correct spontaneously but in the case of dislocation the mandibular condyle moves anteriorly over the articular eminence into such a position that it frequently cannot be reduced voluntarily. Recurrent dislocation may cause the patient much distress.

The precise aetiology of this condition is obscure. A hypermobility of condylar movement is often present and it has been postulated that recurrent dislocation is due to laxity of the joint ligaments (Moore 1965). However normal mandibular posture and movement are produced by co-ordinated reflexly maintained patterns of muscle activity (Brodie and Thompson 1942). Muscular incoordination would seem to be in part responsible for dislocation of the temporo-mandibular joint although in most cases the initiating factors remain uncertain.

Treatment

Surgery may be considered in cases of troublesome recurrent dislocation of the joint when the conservative methods of occlusal correction or short term mandibular immobilisation have either failed or are considered inappropriate.

Hale (1972) has reviewed the surgical techniques that have been advocated for prevention of dislocation. Apart from that of removing the articular eminence (Myrhaug 1951) they mostly aim at limiting the amplitude of movement of the mandible. Amongst the procedures that have been employed are the injection of sclerosing agents (Schultz 1947), ligation of the mandible to the temporal bone with fascia graft (Converse 1964) and the insertion of either a bone graft (Thoma 1969) or a stainless steel pin (Findlay 1964), to increase the height of the articular eminence.

Surgical Procedure

The approach to the zygomatic arch is via a preauricular incision which is extended obliquely forward at the upper end into the hair line. A skin flap is raised towards the zygomatic arch. The root of the zygomatic process of the temporal bone is palpated and the dissection deepened parallel and just anterior to the auriculo-temporal nerve and temporal vessels. The temporal fascia and periosteum are incised and the tissues separated by tunnelling forward to a point just posterior to the zygomatico-temporal suture. The articular eminence and the anterior surface of the glenoid fossa are located. The posterior end of the arch is sectioned with a fine dental fissure bur so that the cut slopes downwards and forwards (Fig. 1). A notch is then prepared on the inferior aspect of the articular eminence so that the posterior end of the sectioned arch can subsequently be located in it, thus increasing the height of the eminence and limiting forward movement of the condyle. The arch is manipulated to this position with a notched instru-

Fig 1 [illegible] of the [illegible]

Fig 3 [illegible]

ment (Fig 1). Intermittent pressure required over special minutes in first lateral and then downward direction before the arch can be locked in the prepared site (Fig 3). Movement occurs due to partial distraction of the zygomatico-temporal suture. Once in place the arch will be found to be self retaining. The wound is closed in layers and drains inserted if required.

Discussion

No further episodes of temporo mandibular joint dislocation have occurred in five patients treated by this technique and followed up to a maximum of four and a half years. [illegible] All the patients suffered frequent recurrent dislocation before operation. In one case there were several episodes a week. The increased height of the articular eminence effectively prevents excessive condylar excursions. The posterior end of the sectioned arch is placed sufficiently far medially to ensure that it lies in the condylar path. Surgery is usually undertaken bilaterally. The arch has not been found liable to displacement before bony union is complete.

Patients are instructed not to attempt more than limited opening of the mouth for a month after operation. The gape is reduced to about 1.5 cms initially but subsequently improves to around 3.0 cms. No inter-maxillary fixation has been used but it might be considered for a short period as haematoma formation occurred two days post-operatively in one patient who ignored the advice to limit jaw movements.

Movement of the zygomatic arch occurs by distraction at the zygomatico-temporal suture which according to Sicher (1949) closes in the third decade of life. All the patients treated have been in their early twenties with the exception of one aged 36 in this patient partial fracture of the arch occurred but healing was uneventful and the operation successful.

No long term complications have been

Fig 2 Mandibular [illegible]

encountered A feature of the technique is that the joint capsule is not opened facial nerve damage should not arise provided the incision is not taken below the tragus (Toller 1974) and the upper limb of the incision is kept parallel to the temporal branches of the nerve as they cross the zygomatic arch The approach to the arch is then made deep to the tissues which contain the temporal branches of the facial nerve

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DECIDUOUS TEETH OF GROSSLY IRREGULAR FORM
A Short Case Report

S N Bussell

Case History

The case illustrated is one involving a seven year old Cornish boy referred for specialist dental opinion having been initially seen at a routine schools inspection. There was no complaint from mother or son neither of whom had noticed any abnormality.

The dentition is at the early mixed stage teeth present

$$\frac{EDC\ 1}{EDC\ 1} \mid \frac{BCDE}{1\ CDE}$$

The erupting permanent incisors appear to be relatively normal and have erupted at about the normal time (Fig 1). In marked contrast the deciduous [illegible] of grossly irregular shape the canines being conical and the first and second molars multi-cusped and tuberculated. Bitemolar X-ray pictures (Fig 2) would suggest that the crown shape of the first permanent molars may also be unusual. It was not possible to elicit any relevant personal or familial history. There was no record of any maternal illness during pregnancy neither was it recalled that any medicines had been taken during the trimester. It is hoped to follow up the case at regular intervals.

Fig 1

Discussion

Unusual or abnormal tooth form is by no means rare and a wide range of tooth morphology has been described since the term tanrodontism was first used by Sir Arthur Keith in 1913 to describe teeth that have an enlarged body at the expense of root size. The standard text books on dental [illegible] but nothing comparable to [illegible] and it is thought that there is nothing similar in the collection at the London Hospital or Royal College of Surgeons museums (Miles 1973).

The aetiology in this particular case is

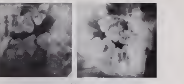

Fig.

as yet obscure but it is known that rubella thalidomide and radiography are potent causes of teratogenesis. Influenza and various virus infections other than rubella have also been suspected as [illegible].

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MILES A. E. W. (1973) Person[illegible] [illegible]tion

ABSTRACT

REEVES D. S., THOMAS A. L., WISE R., BLACKLOCK N. J. and SOLE J. O. (1974) *Lack of Homogeneity of Bladder Urine.* *The Lancet* June 22 1974 1258-1259

From the Department of Medical Microbiology Southmead Hospital Bristol and the Department of Urology Royal Naval Hospital Haslar.

In the course of the assay of antibiotic in serum, urine and prostatic fluid samples it became apparent that antibiotic concentrations varied between samples of early-stream urine (ESU) and the standard mid-stream specimen (MSU). The differences in concentration between pairs of such samples were far outside the limits of error of assay.

Further deliberate attempts were made to confirm this feature in which Cephaloridine was used parenterally. Urine samples were taken at the end of the first and second hours and divided into ESU, MSU and terminal stream urines (TSU). This further study showed differences in Cephaloridine concentration and [illegible] outside the limits of error of the [illegible] [illegible]tion.

These results suggest a significant frequency of non-homogeneity of bladder urine which was more marked when the concentration of the drug in the blood and therefore presumably in the urine was changing rapidly. Body movements were obviously insufficient to cause mixing of bladder content presumably because this was a completely closed system. Layering appears therefore to take place within the bladder and the implication of the finding is that an ESU is representative, due to the proximity of the internal urinary meatus to the ureteric orifices, of urine most recently excreted into the bladder. Differences in specific gravity as between these three types of sample suggested that this factor might also play a part.

A review of the literature has failed to reveal any previous mention of this phenomenon. Further investigation of which is obviously required.

HUMAN CLOSED ENVIRONMENT STUDY COMPLETED AT INSTITUTE OF NAVAL MEDICINE

[illegible]

On July 24, nine Naval ratings were finally released from the human exposure chamber in the Environmental Medicine Unit (EMU) at INM after 81 days of comprehensive medical and psychological testing within the chamber. During this time they were totally isolated from the outside world for a continuous period of 67 days. For the remaining seven days at each end of the experiment they were permitted to leave the chamber for approximately two hours per day, so that baseline measurements with access to fresh air could be determined. After a three-week control period during which the chamber air was of normal atmospheric composition, the subjects were exposed to an additional 0.5 per cent carbon dioxide for five weeks and then conditions were reverted to control levels for a further 11 days while recovery from the effects of the carbon dioxide was assessed. The EMU and its exposure chamber were described in an earlier *Journal* as were the reasons why the experiment was performed[1].

The experimental results, consisting of large amounts of physiological, biochemical, mental and physical performance, and electroencephalographic data, will take many months to analyse and assess, but it is hoped that definitive conclusions concerning the safe level of carbon dioxide for continuous crew exposure in nuclear submarines will be reached by the end of 1974. The study has raised considerable interest by virtue of its wide-ranging nature in many non-Service scientific and medical centres, and also in the United States Navy which provided medical and technical assistance to EMU staff during the experimental period.

Among Service visitors to the EMU dur-

ing the study were General Sir Richard Ward Chief of Personnel and Logistics Ministry of Defence who formally released the subjects from their period of total isolation on July 18 Admiral Sir Andrew Lewis Commander in Chief Naval Home Command Admiral Sir Terence Lewin Commander in Chief Fleet Surgeon Vice Admiral James Watt Medical Director General (Naval) and the Commanding Officers of the [illegible] Hospital establishments

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Edgar J R *J R N A S S* [illegible] 1 (1974) 41 43
Harper M G [illegible] D [illegible] D M *J R N A S S* 29 2 (1974) 58 64

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LETTER TO THE EDITOR

Dear Sir,

I read with interest the paper by Surgeon Captain R H Broughton RN in the Winter 1974 edition of the *Journal of the Royal Naval Medical Service* (2) and would like to make certain comments

The procedure of local excision of plantar warts as the primary treatment method is felt to be unwise for the following reasons

(1) The use of formalin (3 per cent to 7 per cent solutions) with nightly soaking of the foot for 15 minutes following local abrasion of the area affected by the plantar wart has been shown to result in an 80 per cent cure rate after 6-8 weeks of treatment in plantar warts of a diameter of 1 cm and below in children (Vickers C F H) The cure rates in adults are probably less than this but significant success can be obtained by this method

(2) Horwitz and Marker found that up to 55 per cent of patients are cured by application nightly under adhesive plaster of salicylic acid 16 per cent, creasote 24 per cent cera flora 15 per cent olive oil 45 per cent

(3) Barr and Cole comment that using a variety of treatments the overall cure rate for painful plantar warts was 84 per cent and they comment that 20 per cent of their patients showed a spontaneous regression of warts with no treatment

(4) Massing and Ebstein followed natural history of warts in a school for mentally defective children Over a two year period 18 25 per cent of the children in the school contracted warts but 67 per cent of the warts disappeared by the end of a two year period without any therapy

What do the previous figures reveal as regards the ideal treatment regimen? These should start with non surgical methods of the kind mentioned above and it is my personal opinion that the Royal Navy environment in no way prevents their use In addition the use of freezing techniques have been used with either Carbon Dioxide Snow Liquid Nitrogen (Hall A F) or cryosurgery where available

There is a place for surgery in the treatment of plantar warts but it is a small one Curettage followed by diathermy of the area is the most generally accepted surgical treatment for plantar warts

Surgical excision is usually to be avoided since scarring is unavoidable and recurrence of warts in the scar tissue are frequent some of these recurrences presumably being due to the Koebner's Pheno-

menon or the seeding of the wart virus during excision Persistent recurrent plantar warts in adults may be a serious disability but only in a relatively small percentage of patients and it is only in this group that excision therapy is justified

In a busy wart clinic at this department we manage to cure almost all cases of plantar warts by one of the methods advised above and as commented in the above paragraph only carry out excision therapy in the painful recurrent and resistant cases

I feel these points should be noted in view of the suggestion that surgical excision should be the only sure and satisfactory quick approach

Yours sincerely

Surgeon Lieutenant N J Lowe
MB ChB MRCP RN(Retd)
Senior Registrar and Honorary Lecturer

The University Department of Dermatology
Liverpool Royal Infirmary
Liverpool L3 5PU

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HORWITZ O and MARKER T (1960) Treatment of Plantar Warts Acta Derm Vener Stokh 40 p 127

MASSING A M and EPSTEIN W L (1963) Natural History of Warts—A Two Year Study Arch Derm 87 p 306

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ABSTRACT

WILLIAMS C B HUNT R H LOOSE H RIDDELL R H SAKAI Y and SWARBRICK E T (1974) Colonoscopy in the Management of Colon Polyps *British Journal of Surgery* 61 673-682

In this comprehensive paper the indications [illegible] polypectomy are reviewed After brief details covering the preparation of the patient including the Malmo double contrast Barium Enema investigation and bowel preparation for colonoscopy the techniques and [illegible] of colonoscopes electrosurgery [illegible] diathermy snare are discussed Experience [illegible] diathermy snare and with the [illegible] diathermy destruction of small polyps [illegible]

[illegible] polyps up to 4.5cms in diameter [illegible] with the diathermy snare from [illegible] 187 small polyps were [illegible] by the diathermy biopsy technique [illegible] per cent of polyps over 5mm in [illegible] for histological examination [illegible] development of the hot biopsy [illegible] was available from the vast [illegible] polyps of smaller size

The [illegible] of polyps removed is reported [illegible] of malignant potential and [illegible] are discussed There were [illegible] difficulties in removing polyps in four [illegible] due to diverticular disease in [illegible] in the other two because of the size [illegible] polyps There were no serious complications but haemorrhage requiring transfusion occurred in two patients and minor haemorrhage in four patients immediately after polypectomy In one patient a closed perforation occurred when a polyp was being snared this was later found to be malignant at histological examination At operation the small perforation had healed and an instrument of overlying small bowel

Comparison of colonoscopy with the Malmo double contrast Barium Enema shows that up to 95 per cent of polyps over 5mm in diameter can be demonstrated radiologically The place of colonoscopy in the diagnosis and follow up of patients with colon polyps is suggested

Comparison of the complications in this and other series with the morbidity and recognised mortality of conventional management by laparotomy and colotomy shows colonoscopic polypectomy to be a very safe procedure Although the equipment and repair costs are high the procedure saves much in hospital time With the exception of three patients all returned home within 24 hours and most returned to work the following day

The conclusions are that the procedure improves diagnosis removal of polyps reduces the risk of malignant change and saves the patient unnecessary radiation since Barium Enema need then only be repeated every two to four years The procedure is considered to be both cost effective and safer than conventional management of surgical polypectomy

BOOK REVIEWS

LARREY SURGEON TO NAPOLEON'S IMPERIAL GUARD, Robert G Richardson Pp 260 + x Loudon John Murray £4 50

Books by doctors about doctors are usually of interest to laymen as well as those in the profession this scholarly volume is no exception

Dominique Jean Larrey Surgeon-in-Chief to the Imperial Guard was a man who can rightly be said to have awakened the conscience of mankind to the inhumanity of war He won the confidence of Napoleon and by his skill and courage cajoled the authorities to accept that pity and regard for human suffering should be as essential a part of waging war as the provision of supplies and the tactics of the generals

Amongst the measures Larrey introduced to ameliorate the horrors of war was a system of flying ambulances to evacuate the wounded both friend and foe which he took into the midst of the fighting He personally operated under fire amputating and dressing wounds treating the most severely wounded first ignoring rank and including the enemy

Tributes were paid to Larrey not only by Napoleon but also by the other great man of the age Wellington who when told that a French officer at Waterloo was Larrey said Tell them not to fire in that direction at least let us give the brave man time to gather up the wounded This is a work that holds the interest from cover to cover and which can be strongly recommended P D G P

A SHORT TEXTBOOK OF MEDICAL MICROBIOLOGY D C Turk and I A Paton 3rd edition 1974 Pp vii + 344 London Universities Press Boards £3 85 Unibook (paper back) £1 85

This book which is designed for the medical student can be recommended with confidence for its purpose and is a suitable text for junior surgeons and physicians (or indeed pathologists in these days of super specialism) even at the part I level)

The book is an unusual mixture of the philosophical the scientific and the essentially practical clinical approaches but very readable and clearly printed The only spelling error I have detected is 'Shigellinae' There is a curious omission from the introductory section on microscopy fluorescence and electron microscopes are described but there is no mention of phase contrast or interference microscopy The index is good and the in text cross references are given by page number and not the annoying chapter number Both authors and publishers can be congratulated on the low price This has I do not doubt, been due to the total elimination of plates and the confinement of drawings to the essential few that speak clearly thus words

In part V there are four instructions to clinicians on how to get the best results from the laboratory and this deserve in my opinion to be ranked with the famous, now largely forgotten Kuehn's Postulates (a posthumous memorial to statements that Koch did not himself formulate, in spite of his other marvellous achievements)

I think these are worth quoting in extenso

1 Careful and well informed selection of the right specimens to be sent to the laboratory
2 Proper collection of such specimens (wherever possible this should be done before antibiotic treatment is given)
3 Rapid transmission of the specimens to the laboratory
4 Clear but preferably concise indications of the diagnostic problem the treatment already given and the purpose for which the specimen is sent

A quick survey of request forms sent to this laboratory shows that in most cases only (4) is observed regularly and in that case only the recommendation for excision gets attention

It is an unusually pleasant duty to recommend a book so highly I rank it alongside the famous Judd in Burrows Textbook of Bacteriology sixth Edition from which I taught myself microbiology in 1951 (£2 7 6) D O H

LEPROSY FOR STUDENTS OF MEDICINE A Bryceson R E Pfaltzgraff Pp 152 Medenic ra the Tropics Edinburgh and London Churchill Livingston £1 50

This inexpensive book is a valuable introduction to the study of leprosy for the student whose basic scientific education is based on that of the developed world The application of modern immunological concepts early to the clinical description of the disease helps to make the vagaries of the disease comprehensible It is perhaps unfortunate that in the chapter on immunological complications the host reactions are classified as Type I towards the tuberculoid pole and Type II towards the lepromatous pole This is a little apt to cause confusion for those brought up on the Gell and Coombs classification of immunological reactions

Though written essentially on the disease as seen in Africa which the authors declare the clinical descriptions are vivid and the black and white illustrations excellent In addition the social and preventive aspects are fully discussed This reviewed particularly appreciated the emphasis on the questions remaining to be answered in so many aspects of this fascinating disease

Just the book to be purchased prior to embarking on a sea going commission to a tropical Such foresight before the commission starts would pay big dividends months later when the opportunity is to see clinical leprosy presents in some far part of the world The ability at such a time to read about what one has seen will heighten this worth while clinical experience immeasurably In addition it will ease the problem for those who work in the field of clinical leprosy who must get bored with explaining basic principles to visitors but then they are always such friendly people they never seem to mind F I P

Immersion and Performance Underwater I A Adolfson and T E Bachaye Chichester John Wiley and Sons Ltd £10 95

It is a pleasure to be able to review a book which has so many commendable features especially when it is a product of international co-operation Dr Adolfson is associate Professor at the Research Institute of National Swedish Defence at Stockholm and Lieutenant Commander Bachaye MSC USN is Director of Allied Services of the US Navy's Experimental Diving Unit Washington DC Both are internationally respected psychologists in the field of underwater biomedical sciences and this book is a natural product of their collaboration When Dr Adolfson was working for a year as a guest scientist at the Naval Medical Research Institute, Bethesda

Not only is this book the first to gather into one source most of the major studies relating to human perception underwater thus becoming a useful review of this topic for the researcher but also by relating the different factors of this unique environment to diver performance it is a useful book which should be read by all medical practitioners who need to understand the diver and his tasks.

Following a lengthy introduction the major sections on visual vision hearing and spatial orientation underwater Communication in its several forms is given detailed attention in a section to itself So too is human performance but if there must be any criticism perhaps more space should have been devoted to that vital topic

With this material behind but nevertheless welcome recognition in this country of the diver as an essential component of future national economy through the off-shore oil industry a knowledge of the factors affecting mental and physical performance underwater has become important Thus this book is to be recommended as relevant to all practitioners of maritime medicine D H E.

Poisoning by Drugs or Chemicals. Peter Cooper FPS 3rd Edition London Alnhurst Publications £2 85

This handbook has changed its format from previous editions Double column printing has been introduced which makes the book much more readable The inevitable increase in size has been justified on the basis of additional data. Though it will not quite go into my white coat pocket it should still fit into most Casualty Department bookshelves

The text and a comprehensive index give good access to rapid advice Each poison is described briefly under various headings with no padding, and short 5 10 line pointed histories allow it to be read for fun in one's spare time with reward

The small sections on simple qualitative aids to the identification of various poisons will be particularly helpful to doctors who have not got immediate access to professional chemical expertise From these sections a useful box of diagnostic reagents could be prepared for use in a Casualty Department.

Some omissions are inevitable and one of these is mentant with of ingestion of radioactive substances After all this point of such a book is to allow one to deal with the complaint as speeded within a few minutes Perhaps it is for this reason that the more common forms of poisoning are not given much space for then more detailed management such as the acid base problems of aspirin overdosage in children or the use of plasma expanders in barbiturate poisoning

It is reassuring to know however that when paraesthesiae of the mouth and limbs follow your plate of Moules Marinières inadvertently gathered in late spring instead of your christmas bottled Graves to wash them down you would fare better with a half bottle of Sodium Sulphate 10 per cent — I'm told it has a fine bouquet P D C

Medicine in Old Age. (From the *British Medical Journal*.) Pp 178 London BMA £2 00

This most valuable collection of papers previously published in the BMJ can be strongly recommended to MRCP and MRCGP students. No one can complain at a cost of £2 for 22 such articles Amongst the series it is invidious to select either than on a basis of personal preference which is apt to do little more than delineate the previous gaps in one's own knowledge. Possibly for this reason the present reviewer gained most from the more general papers on Drug Therapy Nonspecific presentation of illness and psychiatric disorders in old age. It can only be stressed that this is important practical and examination reading

P J P

Correction

In the review of NORMAL ADOLESCENCE (Crosby Lockwood Staples Ltd) Vol 60 No 2, p 156 *JRNMS* it was stated that no paperback version was available. A paperback is available at £1 50

NEWS OF THE SERVICE

OBITUARIES

Surgeon Captain Evelyn Brooke POLLARD MRCS LRCP RN died on September 28 1974 at the age of 73 years.

Surgeon Captain Pollard joined the Royal Naval Medical Service as a Surgeon Lieutenant in 1925 and was promoted to Surgeon Captain in December 1947. He was a Queen's Honorary Surgeon from March 22, 1956 until he was placed on the Retired List on December 5 1957.

Surgeon Captain Pollard was held in great esteem and admiration by both his contemporaries and his patients. Universally known as 'Pop', it was not clear whether this pseudonym arose because of failure to use his rather unusual Christian names, or from his fatherly attitude — which he had towards everyone but particularly towards his juniors who had a deep respect for an officer who always supported them particularly after the occasional rebuke.

Pop Pollard belonged to the days of the very general surgeon and he made no claim to brilliance in any specialised area. His operating list would seem very dull by present standards but his patients benefited greatly from his gentle humane approach which was not without humility. Certainly his anaesthetists revelled in his work as a result of his unfailing courtesy, promptness and total lack of flappability!

Although he enjoyed surgery his heart lay in the Navy itself, its traditions and customs, its camaraderie and its discipline. He became Principal Medical Officer of HM Hospital Ship *Maine* at an early age, a very much coveted appointment, but he never looked for high administrative office, preferring to keep his clinical interests even when much surgery had since been taken over by younger, more intensively trained medical officers. Perhaps his love of the Navy was best shown by his unfailing attendance at all the dinners and parties given by the Royal Navy Medical Club and his active participation at its committee meetings even when this meant a considerable strain in his later years. Over and over again he would stress the fact that it must remain a Club and that most of its annual events should not be allowed to rise to a point where young medical officers might be discouraged from joining.

The working of the Naval Medical Service has changed a great deal from Pop Pollard's day and he would be the first to acknowledge the improvements that have taken place. Nevertheless his ideals of service to others, encouragement and support for his juniors and loyalty to his seniors are as important today as they have always been. He is survived by his widow who always attended Service functions with him whenever possible even after his retirement and to whom we extend our deepest sympathy.

A O C

Surgeon Commander Carew OMMANNEY DAVIS LRCP LRCS RN died on August 28 1974 at the age of 69 years.

Carew Ommanney Davis entered the Royal Naval Medical Service as a Surgeon Lieutenant on May 19 1930. He was promoted to Surgeon Lieutenant Commander in May 1936 and retired at his own request in January 1937. He was reinstated as a Surgeon Lieutenant Commander (R) in December 1938 and re-entered the Service on mobilisation. He was promoted to Surgeon Commander in December 1944 and was placed on the Retired List at his own request on October 14 1958.

F A T writes

Carew Ommanney Davis — affectionately known as Bertie — qualified in Edinburgh and joined the Navy in 1930. His first sea-going appointment was on the China Station. In 1933 he was one of the crew of the 23 ton ketch *Tai Mo Shan* which sailed from Hong Kong taking a year to the day to complete the journey to Dartmouth via America and the Panama Canal.

Bertie was a good Urologist and an excellent doctor. Behind the Wooster façade was a good brain: he was remarkably well read and a very talented cabinet maker. His house near Banbury was largely converted by himself and in later years after he retired to South Africa he took to making dolls houses superbly well.

After retiring from the Service in 1958 he went into a single-handed country practice where he was much loved by his patients. He will be missed by a host of friends and no enemies.

Surgeon Commander Victor George HORAN MB BCH RN died on March 2 1974 at the age of 70 years.

Surgeon Commander Horan joined the Royal Naval Medical Service as a Surgeon Lieutenant on August 19 1927 and was placed on the Retired List as a Surgeon Commander on August 20 1948.

A J S McFADZEAN OBE DSc MD FRCP FRCP(Edin) FACP emeritus professor of medicine of the University of Hong Kong, died on November 29 at the age of 60.

Probably relatively few of our Medical Service knew Alec McFadzean but any naval doctor and in particular the physicians who had the good fortune to serve in Hong Kong just after the Second World War will mourn his relatively early death with great sadness.

They were exciting days of building, planning and expanding and he was always ready to lend advice and his considerable clinical skill to many of the problems we met which were peculiar to that time and area.

A cheerful, equable and enduring colleague, he loved to baffle us with rare pathologies manifested amongst his Chinese patients by whom he was regarded as omnipotent. In due course he became Dean of the Faculty and a Civilian Consultant to the Royal Navy.

He was a humble man and a doctor and the Faculty of Medicine of Hong Kong provides a suitable memorial for him. From those who knew him our sympathy and thanks go to his wife and family.

E D C

HONOURS AND AWARDS

NEW YEAR HONOURS — 1975

Knight Commander of the Order of the British Empire

Surgeon Vice-Admiral James W[illegible]
QHS MD MS FRCS

Officer of the Order of the British Empire

Surgeon Commander D M Davies
MB BCh MFCM DPh DIH

Ghana Revolution Medal

Awarded to Surgeon Captain J R Lawrence Owusu MVO MBE LMSSA DA in recognition for his services in the treatment of casualties at the Military Hospital Accra during the 1966 coup which deposed President Nkrumah

HIGHER QUALIFICATIONS

Surgeon Commander H B Blankstone—MRCGP
Surgeon Lieut-Commander R. D Curr—MRCGP
Surgeon Lieut Commander W J Scadden—FRCS
Surgeon Lieutenant E P Dowse—FRCS
Surgeon Lieutenant R C. Quinnell—FRCS
Surgeon Lieut-Commander C Banting—DOBstRCOG
Surgeon Lieut-Commander P D Clarke—MRCP
Surgeon Lieutenant W M Linn—DCH
Surgeon Commander (D) D A Coppock—MSc (Oral Biology University of George Washington USA)
Surgeon Commander (D) D M Lindsay—MSn (Prosthetic Dentistry)
Surgeon Lieut-Commander (D) R S Hambly—MSc (Prosthetic Dentistry)
Surgeon Lieut Commander (D) R T Watkin—MSc (Conservative Dentistry)

NEW ENTRIES

Surgeon Lieutenant Commander G L Robertson I L Jenkins K H Sagars
Surgeon Lieutenant Commander (D) A J Woodman V D G Miller (Re entry)
Surgeon Lieutenant H O'Donnell W M Lukin D A. Whitn J E Anderson Miss B C Greatrix
Surgeon Lieutenant (D) D L Thomas J D Roberts James
Surgeon Sub Lieutenant A T Cope A R O Mullin L F Geraghty S D Evans A Summers K M R Van Tolhuyden L J Jarvis K S Lloyd A. F D Mcredith I K Ritchin M D Simmons G Stevenson B G Norris
Surgeon Sub Lieutenant (D) M J Lallan S D B Taylor

TRANSFERRED TO PERMANENT COMMISSION

Surgeon Lieutenant Commander R C Clarke
Surgeon Lieutenant A J Johnson
Surgeon Lieutenant (D) W K Lock G W Myers S K Day S L. Hinbbl

TRANSFERRED TO 16 YEAR PENSIONABLE COMMISSION

Surgeon Lieutenant Commander J J Nicholas
Surgeon Lieutenant J G Williams

PROMOTIONS

To Surgeon Lieutenant Commander N C Drew R G C Mckinlay H A Chandler F D Clarke S B Hopkin N E Baldock
To Surgeon Lieutenant Commander (D) S R Day J F Hart G L Watkins W R Lock
To Surgeon Lieutenant A C H Hammet C C Hunter J M Cobbe P F R Tolley S H Desborough N F Brayley K P Dakowski R J Wyon D Ireland A G Marsden C G Waite
To Surgeon Lieutenant (D) I E C Mahon M J Lovell

To Acting Surgeon Lieutenant C D Houghton J E M Fox D K Price M C Page J C D Turner D I Riddell

Provisional Selections for Promotion to Date June 30, 1975

To Surgeon Captain H G Knox J D Ross

To Surgeon Commander D C Whyte R C Clark M P W Paine

To Surgeon Captain (D) A A Davies

To Surgeon Commander (D) R J Biggs M D Hocking

RETIREMENTS

Surgeon Captains T C Barras W I Crocker R S C Mooney QHP

Surgeon Commanders N L Dunbar N Lee M P Brady

RELEASED FROM SHORT SERVICE COMMISSION

Surgeon Lieutenant Commander J W Beak R D Carr T H D Smyth

Surgeon Lieutenant Commander (D) J Pearson

Surgeon Lieutenants J W Beach P J Kenyney

Surgeon Lieutenants (D) J P Scott R G Powell M H Morris

A MEETING IN THE WHITE HOUSE DURING MDG(N)'S VISIT TO THE UNITED STATES AND CANADA IN NOVEMBER 1974

[illegible] Medical Support) [illegible] James Watt (Med[illegible] [illegible] White House Photograph)

COLLECTION OF MEDALS AWARDED TO NAVAL MEDICAL OFFICERS

On Thursday [illegible] Surgeon Rear Admiral C. L. [illegible] Mitchell CB CBE QHS accepted on behalf of the Royal Naval Hospital Haslar a collection of medals awarded to naval medical officers from Surgeon Lieutenant Commander R. P. Phillips VRDS RNR who had travelled from Cardiff where he is a General Practitioner.

Dr Phillips began his association with the Royal Navy in 1942 as an Ordinary Seaman for wartime service and was serving in HMS *Glenaan* when she was sunk shortly after D Day. He was commissioned in 1944 and released from the Service in 1946 to continue his medical studies joining the RNR in 1953 after qualifying as a medical officer.

A member of the Society for Nautical Research Dr Phillips has been interested in the collection of medals awarded to naval personnel for the past [illegible] collection of some 30 of the [illegible] Naval Long Service Medals included some of the [illegible] awarded to participants in the Battle of the Glorious June 1st 1794 together with the individual groups of medal awarded to some 40 Royal Navy Officers amongst which are those of Admiral Sir William Goodenough who commanded the 2nd Cruiser Squadron at the Battle of Jutland in 1916. It is from this latter group that Dr Phillips has selected the medals of seven medical officers for presentation to the Museum of RN Hospital Haslar.

Dr Phillips' original intention was to bequeath the seven groups to RN Hospital Haslar in his Will but his generous donation now for display in the museum will enable staff members to enjoy the benefits of his hobby for more years than would otherwise be the case.

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

Awards
Miss J Robertson Superintending Sister ARRC
Miss B Haines Superintending Sister ARRC

New Entries
Nursing Sisters
Misses J F Tyler M K Norris A M Ray T A Sanders E M Robson S M Hulley R St Ledger L M Melly D Smith C D Bittker P E Wagstaff
Quarters Officer N a Nursing Miss J A Law

Promotions
To Superintending Sister Misses J Tilley S Skinner

Transferred to the Permanent List
Misses P V Bagenal-Jephson F Bell A Gaughan A C Hawes

Retirements
Miss P M Wilks ARRC Matron (Age)
Miss I Luce ARRC Superintending Sister (Age)

Exchange Appointment from USN
Lieutenant Commander S C Tate USN

CIVILIAN CONSULTANTS TO THE ROYAL NAVY

The following have recently been appointed as Civilian Consultants to the Royal Navy
S H Colman Esq VRD FRCS Otolaryngologist
Dr Jane K Lloyd MD FRCP DPH—Paediatrician
Professor D F N Harrison MD FS FRCS—Otorhinolaryngologist
Professor M J Peckham MD FFR, DMRT—Professor of Radiotherapy
Professor R E Steiner MD NUI FRCP FFR, DMR(Hon) FACR—Radiologist

ROYAL NAVAL RESERVE NEW YEAR HONOUR

Officer of the Order of the British Empire

Surgeon Captain K M Blacklock VRD

Promotions
To Surgeon Commander R A Bennet D H Short
To Surgeon Commander (D) R N Johnston
To Surgeon Lieut-Commander M A Scotch and A R Peters M D Cawley C A Duvall
To Surgeon Lieut-Commander (D) W H Phillips
To Surgeon Lieutenant R W Ferguson

Retirements
Surgeon Commander D G L Davies
Surgeon Lieutenant Commander R M Oliver O P W Robinson I F K Muir

NOTICE

THE EDITOR invites medical and dental staff to send in original papers on professional subjects travel personal experiences and other matters Items of news and matters of interest to the naval medical service will be welcomed from ships and establishments on home and foreign stations Notices of births marriages and deaths are inserted free of charge to subscribers

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Articles and communications may be sent at any time to **The Editor, Journal of the Royal Naval Medical Service, Institute of Naval Medicine, Alverstoke, Hants, PO12 2DL** Two copies should be submitted in typescript Double spacing should be used throughout

References—the name of the author and the date of publication are given in the text thus Smith (1935) believed this to be due etc or lack of basic information on the strategic fundamentals of the science of the sea (Carlson, 1956) The list of authors quoted is put at the end of the article in alphabetical order Each reference in the list should give in order the author's name initials the year of publication (in brackets), the title of the paper, the name of the journal *in full* the volume and the number of the first and last pages For books the place of publication should be stated and the publisher's name

The JOURNAL is published three times a year, three numbers comprising one volume

Subscriptions

For RN and RNR medical and dental personnel on the active or retired list, and for Consultants to the Royal Navy the subscription is £2 per annum (post free) payable on January 1 of each year Single copies 70p

For all others who are not in the above categories, the subscription is £2 40 per annum (post free) or 80p per single copy

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(*The Ministry of Defence (Navy) [illegible] possible [illegible]*)

FRONTISPIECE Tree planting ceremony

EDITORIAL COMMITTEE

TREE PLANTING CEREMONY

From left to right Commander J Voronmarti MC Exchange Officer from the USN Mrs Voronmarti Surgeon Rear Admiral J S P Rawlins OBE Group Captain I R Lindsay RAF Mrs Rawlins Mrs Elliott Surgeon Commander D H Elliott OBE and daughter Philipa all of whom have lived in the United States as a result of Exchange appointments with the US Armed Forces

On May 2 1975 a Japanese Oak sapling was planted by Mrs Carol Voronmarti at the Institute of Naval Medicine. The oak tree was one of three presented to the Medical Director General (Naval) Surgeon Vice Admiral Sir James Watt by the Surgeon General of the US Navy Vice Admiral D L Custis as a Hands Across the Sea gesture These saplings were grown from acorns from an oak tree growing in the grounds of the USN Bureau of Medicine and Surgery in Washington DC which it was thought was brought to the USA by Commodore Perry in 1854 An unusually large acorn is produced from this particular tree and of course the acorn leaf and the acorn are the symbol of the United States Navy Medical Service

The other two saplings have been planted in the grounds of RN Hospitals Haslar and Plymouth

Editorial

The [illegible]

Retirement of Surgeon Rear Admiral A O'Connor, MVO, QHP MFCM, FFARCS

Surgeon Rear Admiral [illegible] Officer in Charge [illegible] Naval Medicine and Editor [illegible] the Navy on Jan [illegible] an appointment as Deputy D[illegible] Transfusion Service in [illegible] His colleagues and staff wish him [illegible] happiness and every success [illegible] p 125).

Admiral O'Connor edited the *[illegible] Royal Naval Medical Service* [illegible] and a half years during which [illegible] and the number of subscribers [illegible] to his untiring correspondence [illegible] subscribers urging them to support [illegible] Journal.

Admiral O'Connor realised that [illegible] could not compete with [illegible] medical scientific publication [illegible] officers would naturally wish to [illegible] papers to the journal of the [illegible] and this they do most successfully [illegible] from the abstracts of papers published [illegible] the medical press which [illegible]

[illegible] keeping [illegible] in mind [illegible] publish them [illegible] the [illegible]

[illegible] hoping [illegible] meetings [illegible] of the Medical [illegible] the Board members [illegible] the Civil Ass[illegible] [illegible] Environmental [illegible] the D[illegible] Dental Training, [illegible] Naval Medicine [illegible]

The mixed [illegible] of the Journal [illegible] editorial [illegible] scientific publications [illegible] Medical Department Bulletin [illegible] re-examined in the light of current [illegible] reporting and the changing [illegible] Royal Naval Medical Service. Every endeavour [illegible] made to strike a proper balance between professional articles of a high standard, reminiscences in a lighter vein and those News of the Service items which keep serving and retired Service subscribers abreast of the promotions, awards, academic achievements and the life and hard times of their friends and colleagues.

The Journal could take many forms. A question [illegible] under examination is its role in [illegible] the whole field of maritime medicine. Should it be retitled the Journal of Maritime Medicine and cater for the shipping [illegible] as well as the Royal Navy? Should it [illegible] with the new Journal of Naval [illegible] will the other Armed Services [illegible]

The Journal must move with the times and [illegible] to improvement will be welcomed by the Editor who will place them before the Board of Management. The assistance of [illegible] will in the final analysis [illegible] determine the policy [illegible]

A case of Idiopathic Respiratory Distress Syndrome (IRDS) treated with Continuous Positive Airways Pressure (CPAP)

Richard H Hunt and R. Bartles

ABSTRACT

A case of Idiopathic Respiratory Distress Syndrome (IRDS) is reported where the neonate was successfully treated with an improvised method for applying continuous positive airways pressure (CPAP) which employed an Ewe Radcliffe ventilator and Oxygenaire mask. The Idiopathic Respiratory Distress Syndrome is described and the rationale for continuous positive airways pressure is briefly discussed with regard to the present knowledge of the aetiology of IRDS. The apparatus and techniques that were used in this case are described.

Introduction

One of the leading causes of death in the neonatal period is the idiopathic respiratory distress syndrome (IRDS) (Scopes 1970 Lancet 1973, BMJ 1974) When this condition develops in a neonate delivered in either of the RN Maternity Units at RNH Gibraltar or RNH Mtarfa it creates considerable problems If the degree of respiratory distress is severe enough the baby may be transferred to a specialised neonatal unit in the United Kingdom (Lammiman Hunt and Lambert in prep) This would require endotracheal intubation and ventilation while in transit. Subsequent treatment of this condition particularly if mechanical ventilation is needed is accompanied by a number of complications (Shepard Johnstou Klatte Burko and Stahlman 1968) especially if the birth weight is less than 1 500 grms or the child has required ventilation within the first 24 hours of life The outcome is dependent on the excellence of medical and nursing care and the availability of blood gas analysis

Since continuous positive airway pressure (CPAP) was described (Gregory Kitterman Phibbs Tooley and Hamilton 1971) it has become the accepted form of treatment for the moderately severe case of IRDS We report here a case of IRDS in a neonate born in the Royal Naval Hospital Gibraltar which was successfully treated with improvised CPAP The Gregory box was replaced by an oxygenaire mask as has already been described (Barrie 1972)

Case Report

The wife of a sergeant in the Gibraltar Regiment was delivered apparently at term on October 10 1974 of a live male infant (JF) after a 2¼ hour labour The baby's APGAR score at 1 minute was 5 and birth weight was 2.5 Kg (5lb 8ozs) Mother had been given Pethidine 100 mgms at 2 hours 45 minutes before delivery

Maturational age was considered to be 38 weeks The baby was placed in an incubator at 89 F with 2L Oxygen/min (34 per cent) His condition improved but peripheral cyanosis remained At seven hours of age intercostal recession was recorded and later grunting respiration was noted The apex rate was 100/min and respiratiou rate 38/min At this time 15 mEq sodium bicarbonate was given by nasogastric tube

At 26 hours he was first seen by one of us (RHH) Intercostal recession was marked the sternum was prominent respiration was paradoxical aud rapid at 60/min with air entry difficult to detect on auscultation There was marked cyanosis of the feet and a generalised cyanotic hue

with central cyanosis The heart rate was about 110-120/mm The chest X ray suggested Idiopathic Respiratory Distress Syndrome

No facility was available for blood gas or acid/base determination but clinically it was considered the baby had moderately severe IRDS and that the appropriate treatment would be continuous positive airway pressure with oxygen enriched air The anaesthetist (RB) agreed with the situation No cylinders of compressed medical air (oil-vapour free) are available in Gibraltar and all compressors and pumps were assumed to be oil lubricated Oxygen was available from the piped system An East Radcliffe positive pressure ventilator was therefore modified to supply the air required and this supplied air to the oxygenator mask which was placed over the baby's head and tied around the neck (Fig 1) (See apparatus p 74)

A catheter was passed into the umbilical vein to allow for fluid and dextrose therapy by infusion This also allowed monitoring of the electrolytes and bicarbonate

Nursing observations of the apex rate respiratory rate presence of intercostal indrawing and grunting skin colour and activity were made half hourly The child's temperature was checked twice hourly

Progress

The cuff of the mask was adjusted to give a pressure of 6-7 cm of H_2O and soon after starting CPAP with 47 per cent oxygen (calculated) the respiratory rate increased to 80-90/min but the intercostal indrawing lessened and there was marked improvement of the cyanosis of the feet

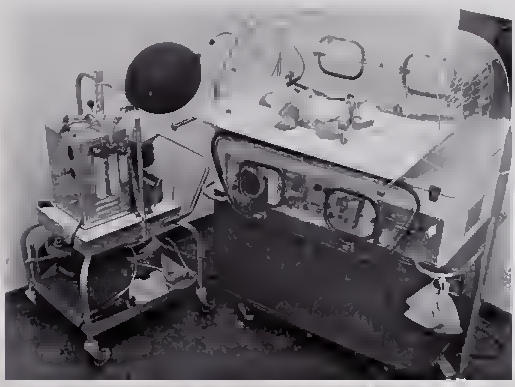

Fig 1 [illegible] baby in position [illegible]

The latter seemed particularly sensitive to the level of CPAP. Fluid balance was maintained with Dextrose 5 per cent at 7 ml/hr.

Forty-four hours after birth (18 hours after commencing CPAP) with the oxygen then at 41 per cent (calculated) the respiration rate began to fall. The infant had become pink, intercostal recession was much less and urine output remained good.

At about 66 hours from birth with the oxygen at 36 per cent (calculated) the respiration rate was about 60/min. The apex rate began to slow to 80-100/min in the absence of any cyanosis. It was considered that this might be an increasing metabolic acidosis due to the improving tissue perfusion shifting acid radicals after the total body hypoxia therefore 5 mEq sodium bicarbonate was given empirically via the naso-gastric tube. However the apex rate remained low and embarrassment of venous return was considered (Rees 1969). Therefore at 70 hours from birth and with no intercostal indrawing present it was decided to discontinue CPAP. The child continued in the incubator with 5L. of oxygen (35 per cent). At this stage the serum HCO_3 was 32 mEq/l.

Satisfactory progress was maintained, no cyanosis developed, the respiratory rate fell from 50/min to 40/min with no return of intercostal recession and the apex rate slowly climbed to 120/min and later 140/min. Tube feeding was reinstituted and at 86 hours of age the child took its first bottle.

The child has progressed normally since discharge.

Apparatus

A Mark Five East Radcliffe ventilator (positive pressure circle system with CO_2 absorption) was modified by removing all the circle system components except the humidifier and attaching a 6L. double ended rubber anaesthetic reservoir bag to the inflating tube mount by a Heidbrink expiratory valve and catheter mount (in reversed sequence). Oxygen was supplied to the standard inlet without using an O reservoir.

The air/oxygen mixture passed through the tail of the reservoir bag via a 1m length of 6mm bore tubing to a Y piece inserted in an Oxygenaire Ltd adult oxygen mask. The other arm of the Y piece was attached by 4mm tubing to a simple dip tube water manometer set to blow off at 10cm H_2O (Fig 2).

Fig 2. *The baby lying in the incubator showing the oxygenair mask, Y connection and the tubegauze cuff. The umbilical catheter can also be seen.*

The Radcliffe was set at 30 cycles/min (delivering a total of about 15 L/min) to which was added initially 10 L/min oxygen giving a calculated oxygen concentration of 47 per cent. The air/oxygen mixture was pumped (every two seconds) into the reservoir bag from which it leaked continuously to the CPAP mask thus using the bagpipe principle. Under steady conditions the manometer pressure varied by only 1cm H_2O.

A scarf made by lightly stuffing a length of tubegauze with cotton wool was tied round the infant's neck. The Oxygenaire mask was placed over the child's head and the fine elastic tightened below the scarf until a pressure of 6-7cm H_2O was con-

systemly achieved on the manometer At no time did the elastic mark the neck. The scarf may serve to protect the carotid sinus from pressure

Calculation of Oxygen administered

Assuming that the bellows draw in 500 ml s of gas with each stroke and it takes half the cycle to fill them (one second or fractionally longer) then at 10 L/min oxygen flow the bellows will contain 170ml s O and 330ml's of air which contains 66mls O The total O content is 236m s and this is 47 per cent of 500mls

Therefore at

8 L/min O_2 each 500mls contains	41% O
6 L/min	36% O
4 L/min	31% O
2 L/min	25% O

Theoretically greater concentrations of oxygen can be achieved by connecting a dead space tube to the Radcliffe inlet where the oxygen inlet is situated The length of tubing acts as a reservoir and its volume can be calculated and arranged for different concentrations of oxygen above 47 per cent to be administered

Discussion

Respiratory failure is a common cause of morbidity and mortality in the new born baby (Scopes 1970 Lancet 1973 BMJ 1974) and occurs in 10 per cent of all preterm deliveries with a mortality around 50 per cent (Klaus and Fanaroff 1973) The aetiology and pathophysiology of the idiopathic respiratory distress syndrome are not well understood

It is considered by Gregory and his coworkers (1971) that widespread pulmonary atelectasis occurs probably due to the high surface tension at the alveolar lining caused by a lack of surfactant (Pattle 1955) This then results in shunting of blood through unventilated lung with subsequent hypoxaemia

Surface tension forces are strongest in small diameter alveoli and weakest in large expanded ones In this situation a few alveoli are widely expanded at the expense of many which remain in or revert to the collapsed state (Rees 1969) Surfactant (Pattle 1955) is made up of a number of phospholipids mainly lecithin and appears to act by reducing this surface tension effect on small alveoli but apparently increasing it in the larger ones (Clements Brown and Johnson 1958) Thus in the normal situation the alveoli tend to be of similar size It is thought that surfactant is reduced or absent in IRDS Gluck and his colleagues (1972) agree that the primary lack of surface active lecithin causes high surface tension and reduced distensibility This is aggravated by the additional factors of a vascular exudates decreased pulmonary blood flow hypoxia and acidosis all of which then decrease the synthesis of surface active lecithin If the infant can be supported for some 48 to 72 hours the natural secretion of surfactant should occur A recent comprehensive review of foetal lung maturation (Whitfield and Sproul 1974) considers the clinical value of measurement of the Lecithin to Sphingomyelin Area Ration (LSAR) in amniotic fluid as a measure of the amniotic surfactant activity together with other pre delivery tests The results of attempts to accelerate foetal lung maturation with glucocorticoids in women with threatened premature labour are discussed This management has not been proven but continued research looks promising

Until IRDS can be predicted and prevented the course of therapy must be supportive until the synthesis of surfactant occurs

It was postulated (Gregory Kitterman Phibbs Tooley and Hamilton 1971) that the application of a continuous airway pressure sufficient to balance the high sur

face tension might reduce the atelectasis and improve the arterial oxygenation They suggested that the physiological function of grunting in the neonate does just that When an infant grunts it is exhaling against a partially closed glottis which increases the transpulmonary pressure and probably helps to prevent atelectasis

It has been shown (Harrison Heese and Klein 1968) that if grunting is prevented by the insertion of an endotracheal tube (without mechanical ventilation) the arterial oxygen tension (PaO_2) falls and that when the tube is withdrawn the PaO_2 rises

Inability to increase the respiratory rate in a neonate with IRDS has been shown to carry a poor prognosis (Stahlman Battersby Shepard and Blankership 1967) Those infants who produce persistent respiratory rates of 100-120/min rarely die

Considerable concern is often expressed about the use of high concentrations of oxygen in the newborn for they are at risk from the retinopathy of prematurity (Patz, 1957) It has been shown (Baum and Tizzard 1970) that retrolental fibroplasia is unlikely if the PaO_2 is below 90mm Hg It has also been considered that prolonged oxygen therapy might increase lung damage (Northway Rosan and Porter 1967) In their paper Gregory and his colleagues (1971) quoted that to maintain a PaO of 50-70mm HG 20 of their series of 51 were in 9t per cent oxygen before CPAP and within 12 hours of commencing this treatment 56 per cent oxygen was sufficient to maintain adequate arterial oxygenation This figure is rather higher than the maximum we used Despite an increase in PaO no consistent change occurred in PaCO and it has been shown (Gregory *et al* 1971) that BP and cardiac output were not significantly decreased and so a progressive metabolic acidosis was not added to the respiratory acidosis generated by the disease

One high HCO towards the end of treatment would accord with these findings suggesting that we had empirically over calculated for this theoretical metabolic acidosis

It also seems that the diseased lung prevents the CPAP from affecting venous return to the heart but that as the condition improves this situation changes This is the presumed cause of the bradycardia in our case (Rees, 1969)

No complications were encountered in this particular baby but a number of complications have been reported including pneumothorax hypercapnia facial oedema and hydrocephalus (Vert Andre and Sibout 1973) The more important complication of hydrocephalus has not been confirmed by other workers and it has been suggested (Dunn Spiedel and Storrs 1973) that this complication is unlikely with early recognition of the onset of respiratory distress and the use of CPAP at a pressure of about 6cm H_2O

We would therefore suggest that CPAP is a practical treatment that can be attempted in the moderate case of IRDS and that this treatment should be instituted at the onset of intercostal recession and of grunting respirations A simple plastic bag may be modified (Barrie 1973) and this is more convenient and easier to use than the oxygenaire mask

The neonate should be kept warm in an incubator at about 90 an umbilical vein should be catheterised to allow fluid balance to be maintained and to facilitate blood sampling for bicarbonate and electrolytes Hypothermia and acidosis have both been shown to interfere with the synthesis of surfactant material in the lung (Gluck Kulovich Eidelman Cordero and Khazin 1972) The neonate may rapidly become hypoglycaemic and it is essential to give dextrose 10 or 20 per cent through the catheter to maintain an adequate serum

ginosis. It is suggested that the positive pressure be applied at 6·8cms of water depending on severity and that oxygen be given up to 60 per cent. Receding cyanosis should be an indication for reducing the oxygen proportion.

More severe respiratory distress or deterioration should be an indication for transfer to UK to a specialised unit.

Acknowledgement

We are most grateful to Surgeon Captain F. J. O'Kelly OBE RN for permitting us to report this case and to Mrs J. Sheppard for typing the manuscript.

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PUBLICATION BY RN MEDICAL OFFICER—ABSTRACT

D. M. Davies (1975) Closed environment problems in nuclear submarines. *Annals of Occupational Hygiene* **17**, 239–244

The introduction of the nuclear reactor into submarines promised unlimited underwater endurance. This could only be achieved if the human problems of continuous exposure to the sealed atmosphere of the totally closed environment could be overcome. Foremost amongst the problems was the establishment of permissible levels for continuous exposure to toxic substances in the atmosphere. The philosophy by which these levels are selected is considered as is the relationship between levels for occupational and continuous exposure in both military and domestic environments. The methods currently used in the Royal Navy to maintain acceptable safe environmental conditions are discussed.

Repair of prostato-rectal fistula

P. B. Rowland

ABSTRACT

A case is described of a para sacral approach to the rectum for closure of a prostato-rectal fistula. Full anal control resulted from this unusual approach.

This case is of interest in that it records the first time in Gibraltar of an unusual surgical approach to the rectum.

Case Report

A Portuguese seaman aged 67 was admitted to St Bernard's Hospital Gibraltar on May 6 1974 from a ship on passage. His bladder had been catheterised the previous night in Portugal for acute retention and on arrival the catheter had been removed by the Port Medical Officer of Gibraltar. He had thereafter again failed to pass urine for 12 hours and was very uncomfortable. He had a history of a few months of frequency dribbling and frequent nocturia.

On admission his general condition was good and he was noted to have a distended bladder and large prostate. A catheter was again inserted and the following investigations were carried out:

Hb 12.5 CSU NAD Bt Urea 34
Na 126 Cl 90 K+ 4.2
Bic 24.5 Bl Sugar 510

His diabetic condition was treated with Insulin.

On May 14 1974 when the patient was diabetically stable a transvesical prostatectomy was performed. A huge prostate with a large middle lobe was enucleated apparently without incident. Histology was reported as *Section shows marked glandular hyperplasia of prostate. There is diffuse chronic inflammatory reaction.* Both wound and urine became infected with [illegible] and the stool became watery.

An attempt was made to pass a bladder catheter on June 4 1974 and the housemans noted comment was it felt wrong. Rectal examination revealed a prostato rectal fistula which was confirmed on EUA as being 2cm in diameter. On June 11 1974 an attempt was made to close the fistula transvesically and sutures were also inserted per rectum. Visualisation was noted to be poor.

The fistula subsequently re-opened. A Wassermann Reaction was performed and was negative. The wound and urine became infected in turn with *Streptococcus faecalis Proteus* and finally *Pseudomonas*.

In consultation with the civilian surgeon concerned in St Bernard's Hospital the para sacral approach to the rectum (York Mason 1972) was discussed. Plans were made for this operation to be performed. A defunctioning double-barrelled colostomy was performed on August 1 1974. In view of the continued urinary infection with *Pseudomonas* Pyopen 5*g* every six hours was started on August 7 1974.

Closure of Prostato-rectal fistula through a para sacral approach to the rectum

On August 8 1974 the patient was placed prone on the operating table with suitable supports to allow adequate respiration. The table was broken and tilted so that the patient assumed a jack knife position. The buttocks were held apart with strapping. An incision was made from the anus 3cm upwards and to the left of the sagittal plane and deepened until the ex

ternal sphincter and levator ani were encountered. Both these muscle groups were divided between multiple tied ligatures with ends left long to identify and to secure the fibres and to reveal the lamina propria of the rectum. This was divided vertically between tied transfixion ligatures to reveal the interior of the rectum and the 5cm fistula. The fistula was easily dissected to define the three layers of bladder mucosa intervening scar tissue and rectal mucosa. Closure was carried out in these three layers without difficulty. A small dead space remained beneath the rectal mucosa. The rectum was repaired with continuous chromic catgut with refashioning to avoid stenosis and the various sphincters were carefully closed with interrupted chromic catgut sutures. The skin was closed with interrupted black silk sutures with suction drainage. A bladder catheter was left in situ. Postoperative course was uncomplicated except by local stitch abscesses and the discharge of a small volume of pus PR from the sub mucosal dead space.

The patient was able to grip an examining finger with his anal sphincter on the fourth day after operation and was encouraged during every waking moment to tighten his sphincter until the act became automatic.

The colostomy was closed on September 24 1974 and the patient was discharged on October 10 1974 with no fistula and full anal control. The closure of his colostomy was delayed by an intercurrent left medial rectus palsy thought to be due to diabetic neuropathy which recovered spontaneously.

Discussion

It has for many years been held that division of the anal sphincters necessarily resulted in faecal incontinence. Mr A. York Mason has written, spoken and travelled widely to demonstrate that *provided* that the divided muscles are accurately and meticulously restored, full anal control is nearly always attainable. It is confirmed that such results as the above can be obtained from this procedure with meticulous attention to the accurate securing and suturing of the divided sphincters. It would be a loss to surgical expertise and practice if a very useful approach to the rectum were to fall into disfavour through lack of attention to the detail Mr York Mason recommended.

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PUBLICATION BY RN MEDICAL OFFICER—ABSTRACT

ELLIOTT D. H., HALLENBECK J. M., BOYE, A. A. (1974) Acute decompression sickness. *The Lancet* 1193

The long-standing concept of the bubbles acting solely as a mechanical cause of decompression sickness by tissue distortion or as an embolus has lately been challenged and recognition of surface activity at the blood gas interface of the intravascular bubble has initiated reconsideration of possible disease processes. The conventional view that spinal-cord damage in the decompression sickness of diving and compressed air work is due to systematic embolism has been challenged by evidence that obstruction of the epidural cerebral venous system is an important causal factor. It is encouraging to physicians concerned with the treatment of decompression illness that interfacial effects at the surface of intravascular bubbles provide the basis for a new approach to what is often a puzzling and difficult clinical situation. While immediate recompression to the depth of relief remains the primary treatment other types of therapy are indicated in those who fail to respond and in those for whom there is no compression chamber readily available.

A forgotten cause of vertigo

Peter W Head

ABSTRACT

Syphilis in its congenital or acquired form is a well documented cause of both cochlear and vestibular dysfunction Fifty years ago ENT surgeons had this disease high on the list of differential diagnoses when confronted with sensorineural deafness or loss of balance in the young adult Over the years with a greater increase in knowledge of the potential causes of cochleo labyrinthine dysfunction and at the same time a decrease in the number of cases of late acquired and congenital syphilis seen in this country there is a tendency to forget the disease in relation to the ear In the acquired form of syphilis, otoneurological symptoms occur in the tertiary stage usually later in life and the possible diagnosis may have been suggested by the patient's history It is in the congenital form that the true cause may be overlooked or in cases where a language barrier presents a difficulty in obtaining a clear history Mawson (1967) in his Diseases of the Ear presents a lucid précis of this situation Congenital syphilis occurs in two forms either as a manifestation of secondary syphilis within the first two years of life or as a manifestation of tertiary syphilis between the 8th and 20th years of life To quote Mawson the first of these corresponds with the precoce of the French authors ie a meningoneuritis of the 8th nerve or otolabyrinthitis (with otorrhoea) which destines the child by virtue of severe mixed deafness, to become a deaf-mute In such cases 95 per cent of infants over 3 4 months old have a positive blood serology

The later form of congenital syphilis involving the ENT discipline is usually associated with the well known Hutchinson's triad notched teeth interstitial keratitis and labyrinthitis However Hutchinson's own original description in 1863 is rarely quoted A form of deafness which occurs in these cases (ie congenital syphilis late form) and which as far as what little observation I have made on the subject goes appears to be peculiar to them, is one in which the function fails without any external disease It is usually symmetrical not infrequently its stages are rapidly passed through and a patient who six months ago could hear almost perfectly becomes, without otorrhoea and without any marked degree of pain utterly deaf The onset of otoneurological symptoms normally appears between the 8th and 20th year but may be delayed some cases having been seen for the first time aged 40 Serological reactions diminish rapidly after 16 years of age and may be negative when the patient first presents The effects of the disease always extend to the vestibule Deafness begins in one ear soon extending to the other and is associated with vertiginous symptoms Progress of the disease process may be very rapid (within weeks) but the outcome if untreated is complete loss of labyrinthine and cochlear function This form of deafness probably never

appears in the acquired disease and in the latter caloric responses are usually present in contrast to late congenital syphilis

Such cochleo vestibular symptoms appearing in the young adult may well arise from other causes eg laminal deafness congenital degeneration of the Striu Vascularis toxic deafness Menieres disease and cerebello pontine angle tumours Currently the possible association of hyperlipidaemia and progressive sensorineural loss in the young middle aged is under investigation in this unit A full otoneurological investigation is required to reach the correct diagnosis and may involve the Consultant Physician and Venereologist

The case here presented exemplifies the problems and pitfalls in differential diagnosis A coloured patient aged 25 with an indifferent command of English was admitted to the ward with a four day history of vague non specific rotational vertigo (R) sided tinnitus and nausea Symptoms occurred suddenly early one morning after a rather alcoholic party There was no relevant aural history that could be elicited no recent treatment with neurotoxic drugs or current viral infection although he had been treated for malaria (quinine) in the past X-rays of chest and internal auditory meatuses were normal Blood sugar and electrolytes were normal but his blood picture showed a relative eosinophilia no parasites were demonstrated in the stool specimen Urinalysis NAD WR/VDRL — ve The Professor of Medicine could find no significant evidence of tropical disease to account for his symptoms ENT examination revealed a spontaneous 2 nystagmus to the left a right sided sensorineural hearing loss above 3KHz (virtually outside the main speech area) and partial right sided canal paresis on electronystagmography Békésy and speech audiograms indicated that the lesions were probably peripheral in site ie within the cochlea or vestibule rather than the neural tracts On the findings a presumptive diagnosis of Ménières disease was made Cinnarazine tab one t i d restricted salt and fluid intake being advised There was improvement in his subjective symptoms and he returned to work only to be re-admitted a month later with a recurrence of vertigo rapid onset and almost complete left sided deafness (previously normal) and right sided sensorineural loss worse than previously recorded Whilst being further investigated his remaining right-sided hearing started to deteriorate to a level where conversation was nearly impossible Electronystagmography now revealed canal paresis in both ears and once again the presence of recruitment indicated a peripheral lesion

CSF examination Globulins in excess Protein 70mg per cent Lange 1 111 000 000 WR positive.

With this information and a now obtained vague story of treatment with penicillin three years earlier for a penile sore a diagnosis of syphilitic cochleo vestibular disease was made and on a regimen of 0·9 meg unit procaine penicillin daily for 14 days and Prednisolone 20 mgm t i d with in three days there was a dramatic audiometric improvement in the right auditory acuity and complete cessation of all vertigo There was no recovery of left cochlear function and both labyrinths continued to show some canal paresis on electronystagmography At the time of his discharge from hospital the right ear showed an audiometric level of 20dB in the speech frequencies previously having been depressed to 70 80dB at all frequencies The Venereologist considered that no further immediate treatment was required and the patient has since returned to his own country

From this illuminating case the difficulties of diagnosis are apparent No serological evidence could be obtained from relatives to indicate that this might be a con

genital lesion until the second time he had received treatment for what may have been syphilis two years prior to the onset of symptoms. If so, tertiary symptoms had become manifest within two years of the primary chancre. The case also highlights the need for early treatment before irreparable damage is caused. Had a CSF examination been carried out on the first admission and an earlier diagnosis arrived at, the left cochlea might have been saved. However, in perspective the number of cases seen complaining of dizzy spells and the not uncommon Meniere's syndrome preclude admission and lumbar puncture as a routine investigation for all presentations of vertigo. Nevertheless, in underdeveloped countries syphilis remains often undiagnosed or inadequately treated.

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Recommended reading

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Modern trends in diseases of the Ear, Nose and Throat. Edited by Maxwell Ellis, p. 15. London: Butterworth (1972).

B.M.J. (1975). *Secondary syphilis and its pains*. 1, 112.

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PUBLICATIONS BY RN MEDICAL OFFICERS—ABSTRACTS

O'KELLY, F. J. (1975) Concept and principles of Hygiene in the Royal Navy. *Annals of Occupational Hygiene* **17**, 221–226.

The principles of occupational hygiene in its broadest concept is essential to health preservation in the Royal Navy. In the environment in a ship, where the seaman works and lives, the usual hazards of noise, fumes, dust, toxic chemicals and radiation pose special problems in control because of confined spaces, ventilation difficulties, climatic extremes and operational requirements. All levels of command are involved in determination of hazards, implementation of action to prevent, supervision and training, in safe practice, with the Medical Department in an advisory and supervisory role. Expertise is spread across the board with central supporting services to investigate problems in depth and progress research in matters of particular naval importance.

WALTERS, J. D. (1975) Hot environments — measurement and tolerance estimation. *Annals of Occupational Hygiene* **17**, 255–264.

To remain physically and mentally healthy and efficient, man's core temperature must be maintained very close to 36·8°C. Unlike most other objects, man reacts dynamically to thermal environments and can maintain a constant core temperature in a wide range of climates. Below this range of physiological adaptation, life is possible only by recourse to clothes, shelters and similar technological aids to survival, whilst above it life can be maintained for a limited period until gain or hyperthermia limit the exposure. The limit for which such exposure may continue is dependent upon such factors as energy expenditure, the individual's ability to heat and the thermal severity of the environment.

This paper discusses briefly the physiological problems facing man in a hot climate and describes some of the more commonly used indices of thermal severity with some comments upon their limitations and advantages. Finally reference is made to a method of determining safe tolerance times in environments so hot as to preclude the possibility of maintaining thermal equilibrium indefinitely.

MALLOWS, H. R. (1975) Postgraduate training for Occupational Medicine — A Service viewpoint. *Proceedings of the Royal Society of Medicine* **68**, 91.

The paper describes briefly developments in the training of non-clinical specialists in the Navy since the establishment of the post of Director of Environmental Medicine in 1970 and refers to similarities in training in the Army and RAF.

It draws attention to the lessons of Service experience which could help to bridge the gap which unfortunately still exists in the civilian field between Occupational Medicine and Community Medicine and to the handicaps under which all branches of preventive medicine have hitherto laboured through having neither a Royal College of their own nor any formal connection with one.

It reminds, therefore, by stressing the importance of widening the interests and membership of the recently established Faculty of Community Medicine of the Royal College of Physicians to embrace all aspects of preventive medicine.

A case of backache on Polaris patrol

T. Pace

ABSTRACT

The management of a case of prolapsed intervertebral disc on a Polaris patrol with its medical constraints is described. A traction system was improvised with the materials and skills to hand on the ship which immobilized the patient's symptoms sufficiently well for the patrol integrity not to be jeopardised.

A Royal Navy Polaris submarine carried out a routine patrol during the summer of 1974. One of the aims on such a patrol is to remain undetected and therefore to stay submerged throughout and not to transmit by radio. This is sometimes at variance with the doctor's lot.

After a few weeks on patrol a Senior Rating reported ill with vague lower abdominal pain, vomiting and slight diarrhoea. He was apyrexial and was turned into his own bunkspace for observation. His bunkspace was selected as the Sick Bay is small and the admission of a patient into the latter makes impossible its use as a consulting or treatment room.

The following day his vomiting and diarrhoea had subsided but the abdominal pain was still present and now appeared to emanate from the lower back. He was in great discomfort and the additional frequent disturbance by his messmates going on watch had combined to prevent his sleeping. It was decided therefore to transfer him to the Sick Bay after all. During this manoeuvre it was discovered that he could not bend to swing out of his bunk because of the back pain. Examination revealed no objective abnormality so he was helped out and on to his feet, however the pain prevented him from supporting his own weight. He was lain flat, given an injection of Pethidine 50mg and Stemetil 12.5mg, then moved to the Sick Bay with his back supported. Four hours later the drugs had to be repeated before he was able to sleep.

The following day he awakened, moved in his bunk and the severe pain returned. There was no abdominal pain but another pain radiating in a sciatic distribution down the right leg helped confirm the suspicion that the patient was suffering from a prolapsed intervertebral disc. There were no abnormal neurological signs but straight leg raising was limited to only a few degrees on each side. He was given one further injection of Pethidine and Stemetil, then elastoplast skin traction was set up (Fig 1).

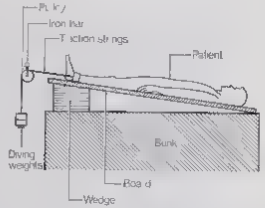


Fig 1. *Patient undergoing elastoplast skin traction.*

A partial bulkhead ran parallel to the foot of the bunk and to this a metal bar was bolted. The foot end of the bunk was tilted and the strings of the traction set were run over a pulley attached to the metal bar. Diving weights were used to provide the weight for traction (Fig 2).

Fig. — A. & Bay

After 24 hours in traction the pain had disappeared and the back pain was reduced from severe to moderate degree. The pain continued to diminish over the following 48 hours.

A complication arose however when the patient complained of intensive itching under the elastoplast. It was peeled off to reveal a severe blistering allergy. The traction apparatus was dismantled and over the following few hours sciatica and severe backache returned.

We might be said to have been improvident in not including orthopaedic corsets amongst our restricted stores, nevertheless we were faced with another 4½ weeks of patrol without traction and a patient with severe pain alleviated only by narcotic drugs. This was clearly an untenable position and we began to think of the possibility of alternative actions open to us.

While we were debating, it became known that an Able Seaman on board was an ex saddlemaker. Plentiful supplies of leather were carried on board and, after a brief discussion, the saddlemaker volunteered to fashion a fitted corset out of the leather. This he did and when the corset was fitted and traction applied to the corset the patient's pain once more was eased. We were thus able to continue without having to break patrol silence.

After two weeks of freedom from pain the traction was discontinued and mobilisation was attempted. We were able to achieve lying or sitting without more than minor discomfort but any attempt to mobilise him further resulted in recurrence of the pain. As soon as the patient was lain flat again the symptoms disappeared. Although a stoic he eventually became very depressed over the matter and maintenance of his morale became an equally large problem. This was the position when we returned from patrol five weeks after he initially became ill.

The day after our return he was packed into a helicopter litter and disembarked via the torpedo loading hatch. He was flown ashore and transferred to the Royal Naval Hospital, Haslar by ambulance.

In Haslar a further period of traction without success was followed by manipulation of the lumbar spine under general anaesthesia and the instillation of epidural hydrocortisone. This resulted in considerable improvement to the extent that he was able to be discharged and followed up as an out patient.

Acknowledgement

My thanks are due to Able Seaman D. A. Tipple, the ex saddlemaker, for his skill and to Commander J. N. Colquhoun, Royal Navy, Commanding Officer, for permission to report this case.

Pityriasis lichenoides et varioliformis acuta and suspected cardiomyopathy

Nicholas J Lowe

ABSTRACT

A case of Pityriasis lichenoides et varioliformis acuta *(PLEVA) is reported in which evidence of a cardiomyopathy developed during the early stages of the disease*

History

A 32-year-old Royal Naval rating was admitted to RN Hospital Haslar with a skin eruption suggestive of *Pityriasis lichenoides et varioliformis acuta* (Fig 1) and an initial pyrexia of 40 C. There were no other symptoms at this stage and examination revealed no other relevant features. He had been on no drugs, there was no known contact with infectious disease and he had not travelled abroad in the previous 12 months. Twelve days after the onset of the skin eruption he developed dyspnoea at rest and peripheral oedema. There was evidence clinically and radiologically of cardiac enlargement.

Electrocardiograph showed inversion of the ST segment in lead V2 with flattening and slurring of the ST segments in the other precordial leads. These features were felt to be compatible with a cardiomyopathy. Treatment with bed rest, diuretics and potassium supplements was carried out and the patient improved, repeat X-rays and ECGs returning to normal. He remained intermittently pyrexial until these

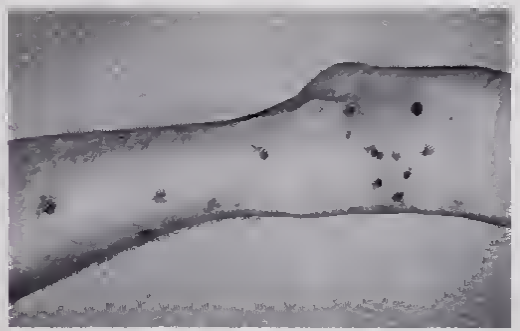


Fig 1. Showing the early stage of the skin lesion of *Pityriasis lichenoides et varioliformis acuta*

symptoms resolved The skin lesions became those of *Pityriasis lichenoides chronica* (Fig 2) and gradually resolved over the subsequent three months with intermittent ultra violet light weekly in minimal erythema dosages

In view of the progressive improvement it was not felt necessary to treat the patient with systemic corticosteroids though these were considered during the acute illness

Investigations Results

Normal Full blood counts liver function tests urinalysis and culture Normal Protein Electrophoresis and Immunophoresis Lipoproteins Urea and Electrolytes Serial Transaminase and Creatinine Phospho-kinase levels Erythrocyte sedimentation rate was as follows

14 12 73	2 1 74	24 1 75	13 3 74
3	90	22	7

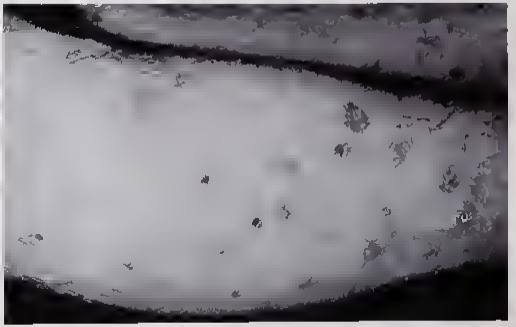
Negative LE Cells Anti nuclear Factors WR VDRL Monospot Test for Glandular Fever and Paul Bunnell Blood cultures were sterile x 3 Throat swabs were sterile x 3 Toxoplasma titres were negative Viral titres showed no evidence of a recent infection in acute and convalescent serum Leptospiral agglutinins were negative Swabs from skin lesions grew *Staph progenese* only

Skin Biopsy (20 12 73) There is necrosis of the epidermis with associated oedema and inflammatory infiltration in the upper dermis There are lymphocytic infiltrations around the dermal blood vessels with extravasation of red blood cells. These changes are compatible with a diagnosis of *Pityriasis lichenoides acuta*

Discussion

The clinical features of this disease often suggest an acute infective illness previously named Febrile Ulceronecrotic Mucha Hubermann's Disease This was the picture in the case reported Confusion may occur clinically with varicella at this early stage

It has been suggested that the causative agent may be a virus and similarities have



been drawn between PLVA and *Pityriasis rosea* (Marshall 1956)

Toxoplasmosis has been suggested as the agent in some cases reported from Bulgaria (Zlatkov and Andrew 1972) though several studies have noted negative toxoplasmal titres as in this patient (Marks Black and Wilson Jones 1972)

Szymanski (1959) has advocated removing Mucha-Habermann Disease from Parapsoriasis concluding it to be essentially a vasculitis, the acute onset with associated pyrexia and histology being in favour of this view However in this patient despite the acute onset there was progression to *Pityriasis lichenoides chronica* (Fig 2)

Marks *et al* (1972) considered that *Pityriasis lichenoides acuta* and *Pityriasis lichenoides chronica* are variants of the same condition However they found no evidence that vascular involvement played a central role in the pathogenesis of *Pityriasis lichenoides* Their patients did not appear prone to any systemic complaints but raised immunoglobulin levels in some patients were noted The co existence of *Pityriasis lichenoides chronica* and *Poikiloderma atrophicans vasculare* is accepted as a pre reticulotic eruption in some patients (Samman 1971)

The course of *Pityriasis lichenoides chronica* and *Pityriasis lichenoides varioliformis acuta* is extremely variable though many cases resolve within six months (Rook Wilkinson and Ebling 1972) Other cases may undergo recurrences for several years

More recently it has been noted that tetracycline aids resolution and perhaps suggests an infectious cause with a resulting hypersensitivity vasculitis (Piamphongsant 1974)

This patient would also perhaps suggest an infective aetiology with a hypersensitivity response in view of the febrile nature of the illness and the systemic complications

Unfortunately attempts to obtain immunofluorescent skin studies were unsuccessful in this patient due to a failure of specimen transport We have subsequently carried out immunofluorescent skin studies in one other case of PLVA with negative results

The skin lesions in this patient have cleared without any systemic therapy Corticosteroids (Winkelmann and Lorenc 1959) tetracycline (Piamphongsant 1974) (Shelley and Griffith 1969) and methotrexate (Cornelison Knox and Everett 1972) have been advocated No previous reports of the association of *Pityriasis lichenoides et varioliformis acuta* and cardiomyopathy have been found in the literature

Acknowledgement

I am grateful for Surgeon Captain Preston's helpful advice on this paper

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A supernumerary tooth in the lower molar region: A case report

L. C. Langan

ABSTRACT

Supernumerary teeth in the upper jaw are relatively common but cases in the lower jaw are rare. In his survey of supernumerary teeth Stafne (1932) saw 131 upper molars to 10 lower fourth molars. The following is a report of a single supernumerary tooth in the lower third molar region.

Clinical Presentation

A 40 year old woman attended the hospital dental clinic complaining of a Wisdom Tooth erupting under her lower denture. She had full dentures fitted 20 years previously.

Clinical examination revealed a partially erupted tooth in the 8/ region. This tooth looked like a lower third molar. However an oblique lateral radiograph of the mandible (Fig 1) showed that another molar tooth lay directly below the partially erupted tooth. The radiograph of the opposite side revealed no buried teeth.

The two molar teeth were removed under endotracheal anaesthesia and healing was uneventful. New dentures were constructed four weeks post-operatively.

Fig 1 [illegible] the 8/ region.

[illegible] Region.

Discussion

The partially erupted tooth was small and of conical shape (Fig 2) and it would seem fair to assume that this was the fourth molar and that the buried tooth was the third molar. If the radiograph had not been taken the fourth molar could have been mistaken for the wisdom tooth and extracted leaving the real third molar in situ. This case underlines the need to take radiographs of all wisdom teeth before extraction.

Reference

STAFNE, E. C. (1932) Supernumerary teeth. *Dental Cosmos*, **74**, 653–657.

A case of grossly infected fracture of the mandible

T J C Hall

ABSTRACT

[illegible]

Introduction

Mandibular fractures that are compound intraorally soon become infected by the pathogenic bacteria of the oral cavity. Kelsey Fry and Ward (1956) have noted that a patient with a fractured jaw rapidly exhibits a foul dirty mouth due to the interruption of the normal cleansing by the tongue and cheek movements. The resistance of the patient to an infection may be lowered by dehydration or a deficient diet.

In the absence of effective treatment the infection may spread to involve the more distant bone and the soft tissues. Serious complications are liable to follow. Even if the potentially life endangering soft tissue infections are avoided, osteomyelitis of the mandible is a real possibility. At best healing of the fracture will be prolonged and it might be thought likely that non union will result. Killey (1967) however notes that the mandible has a great tendency to unite and he observes that many untreated fractures eventually cure themselves in parts of the world where treatment is not available.

Case Report

History

A 47 year old Gibraltarian male reported complaining of a swelling over the jaw. He stated that he had first noticed the swelling two days previously. It was [illegible] established on closer questioning that the patient had been involved in a fight two or three weeks before and that in all probability this was when the fracture was sustained.

At this time examination revealed an ill man of unkempt appearance with a large painful abscess over the right side of the jaw spreading into the neck. The mouth was described as very obnoxious. The patient refused admission and oral tetracycline was prescribed. Five days later the patient returned and gross neck swelling was then present. At this time he was unable to swallow. He was admitted and the massive swelling was incised externally under sedation. Little pus was obtained but some serous drainage occurred. Radiographs had shown a fracture of the mandible and the patient was referred for treatment.

Clinical Examination

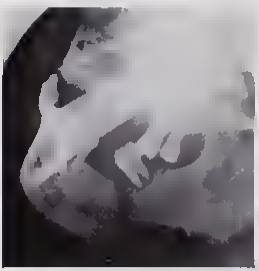
On examination a large submandibular abscess was present on the right side. There was marked spread into the neck and the swelling was hard. Serous exudate was draining from the previous incision. Intraorally there was swelling of the buccal sulcus. The tongue and the floor of the mouth were raised on the affected side and the swelling was board like to palpation. The alveolar ridge was seen as a trough between these swellings. Trismus made inspection of the mouth difficult.

The dental state was poor

87 / 4 8 were present $\overline{6}$ was

6321/123 almost exfoliated Dentures had never been worn

Radiographs demonstrated an unfavourable displaced fracture in the lower right first molar region (Fig 1) A vestibular resorption was noted around this tooth which was of a pattern considered to be more consistent with infective resorption since injury than with the longstanding periodontal disease



Treatment

A further submandibular incision was made the following day under general anaesthesia and the abscess was explored by Hilton's method up to the fracture line and through into the floor of the mouth Some pus and further serous exudate were obtained and a rubber drain inserted

87/ were removed

612 /12

A growth of coagulase positive staphylococcus sensitive to penicillin but not tetracycline was obtained from the initial drainage procedure Intramuscular crystalline penicillin was thereafter used The swelling reduced slightly over the next three days and it was then possible to obtain impressions for splints

On the seventh day after admission the swelling was still hard and extensive but it was decided to reduce and immobilise the fracture

At operation under endotracheal anaesthesia a Moule's pin was inserted into the right ramus above the angle The submandibular incision was re explored and another drain inserted The fracture site was exposed through an intraoral incision along the alveolar ridge Reduction of the fracture was attempted Good reduction was not obtained due to the difficulties caused by the swellings both buccal and lingual to the alveolar ridge and the fact that bony contact only occurred low down in the fracture line following resorption of the alveolar bone Bleeding was troublesome Upper and lower modified Gunning splints were inserted and fixed by peri alveolar and circumferential wires A circumferential wire was inserted on the left side only to avoid the danger of passing an introducer and wire on the right side through the infected swellings to healthy bone A simple wire around 43/ sufficed Intermaxillary fixation was applied The external pin was attached by universal joints and insulator to an anterior bar from the lower splint.

Post operatively the local and general conditions of the patient slowly improved over the next two weeks The swelling resolved steadily Apart from difficulties caused by the patient refusing to co operate with the Nursing Staff progress was uneventful The pin was removed at four weeks and the splints after six weeks At this stage the fracture was springy but consolidation progressed without symptoms At six months it was well healed with no sinus formation and the patient was finally discharged

Discussion

Kelsey Fry and Ward (1956) state that the collection of pus under pressure is harmful to the healing of a fracture The initial operation for drainage was carried out under sedation and this was in accordance with the advice of Kirley *et al* (1971) for the drainage of a Ludwig's angina type of swelling where general anaesthesia is a grave risk to the airway Although a further drainage procedure was required the initial incision provided relief of the congestion and so enabled general anaesthesia to be used for the second operation

Pin fixation of the Roger Anderson orthopaedic type was probably first suggested for use in mandibular fractures by Mirchison in 1942 when working with Sir Harold Gillies (Mirchison 1972) It was developed by several workers including Converse and Wakniz (1942) and Clouston and Walker (1943) Nowadays pin fixation is being used with less and less frequency (Melmed 1972) Killey (1972) states that external pin fixation is seldom required for the treatment of the civilian type of fracture of the mandible However in spite of the several disadvantages it is of use in cases where the fracture is infected and there is no need for control of the edentulous posterior fragment Transoseous wiring or plating is strongly contraindicated in the infected case (Rowe and Killey 1968) The severe intraoral swelling present in this case made it impossible to control the posterior fragment with the saddle of the splint The patient required to be kept in hospital for feeding and social reasons for the full period of the fixation so one of the disadvantages of pin apparatus was removed

Kramer (1968) states that [illegible] efficient bony union is dependent on the [illegible] come of a race between the osteogenic tissue complex arising from outside and within the fractured bone ends and the non-osteogenic tissues lying around the fracture Watson-Jones (1960) states that the infection of a fracture alone is only a cause of delayed union and provided that the immobilisation is firm union will ultimately occur In view of the several unfavourable factors in this case that is the four week delay prior to fixation the gross infection present and the relatively poor reduction obtained it must be considered fortunate that union occurred in so short a period

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The incidence and epidemiology of tinea pedis in the crew of a nuclear submarine

M D Cotterall

ABSTRACT

[illegible]

Introduction

A number of studies have been undertaken to investigate the incidence and epidemiology of tinea pedis in selected communities (Gentles and Holmes 1957 English and Gibson, 1959 English Gibson and Warin 1961 English Wethered and Duncan, 1967 English and Turvey 1968 Gentles and Evans 1973) These studies have consistently demonstrated that adult males have the highest incidence of disease and service in the armed forces has been suggested as one reason for this prevalence (Hopkins Hellegas, Ledin Rebell and Camp 1947 English 1961 English and Turvey 1968) although in a recent study of tinea pedis in a swimming community (Gentles and Evans 1973) the incidence was found to be unrelated to such service. Royal Navy personnel spend considerable periods of time abroad during their careers an additional factor which is thought to influence the incidence of infection particularly that due to *Trichophyton rubrum* (English 1961)

The crew of a nuclear submarine represents a community of adult males confined beneath the sea for patrols lasting approximately two months Such a community might be reasonably expected to yield a high incidence of tinea pedis particularly since a number of surveys has demonstrated the incidence to be greater in persons living a communal life (Hopkins *et al* 1947 English *et al* 1961 English *et al* 1967) and/or using communal washing facilities (Gentles and Holmes 1957 English *et al.* 1967) These two exacerbating factors exist in the submarine on patrol

Two important conditions relating to the epidemiology of tinea pedis are present Firstly the crew is divided into two well defined groups with regard to footwear those working in the forward compartments wearing sandals and those working in the after compartments wearing rubber soled leather boots colloquially known as steaming boots Although the latter group wear heavy foot attire during working hours (approximately 8 hours daily) it is important to note that sandals are worn at other times Secondly for the purpose of showering the crew is divided into three groups each using a separate bathroom

Method

The study was undertaken on board HMS/M *Resolution* during a deterrent patrol Prior to commencing the project the submarine had been at sea dived for two weeks The crew had been living in close contact for the five week period before sailing whilst the boat had been undergoing maintenance and work up

With the exception of two individuals, the entire crew was included in the study giving a sample of 146 adult males between the ages of eighteen and forty years Both feet of each man were examined for clinical evidence of infection and lesions classified according to the groups defined by Holmes and Gentles (1956) At the time of examination details of age type of footwear length of service in the Royal Navy and in the submarine service and a history of service overseas were obtained

No individual was currently receiving antifugal chemotherapy Skin scrapings were taken from the fourth interdigital cleft of the affected foot in cases with unilateral clinical signs and from both feet if there were signs bilaterally or if there was no clinical evidence of disease Samples were collected into folded paper and allowed to stand for a minimum period of 48 hours prior to laboratory examination This consisted of microscopy after treatment with 20 per cent potassium hydroxide and inoculation into two test tubes one containing 4 per cent malt extract agar and the other 4 per cent malt extract agar with potassium tellurite to inhibit bacterial growth The cultures were incubated in the submarine at ambient temperature (24 25 C) and examined at weekly intervals Final identification and classification was undertaken by the Department of Medical Mycology University of Glasgow on return from patrol

The incidence of initial culture contamination with non-dermatophyte fungi was relatively high the species being identical to those reported by Doris Harper and Morris (1972) as being present in the submarine atmosphere These were mainly species of *Penicillium Aspergillus Fusarium Mucor* and *Yeasts*

Repeat laboratory examinations were performed on all those initially positive on microscopy but culture negative and also on those men with Group III and IV lesions from whom no dermatophyte had been isolated This latter group has been shown by Holmes and Gentles (1956) to yield a significant infection rate

Results

a **Lesions**

Fifty six men (38 3 per cent) were found to show some clinical evidence of disease Lesions were present in 26 (28 5 per cent) of the 91 men whose footwear consisted solely of sandals and in 30 (54 5 per cent) of the 55 men who wore heavy footwear during working hours The incidence of clinical disease in the sandals and heavy footwear groups were 62 per cent and 38 per cent respectively the difference being statistically significant at the 5 per cent level

Table I
Incidence and Severity of Lesions Related to Footwear

Group	No of Men	Sandals			Steaming Boots		
		Number	Column %	Row %	Number	Column %	Row %
I	90	65	71	72	25	45	28
II	26	17	19	65	9	16	35
III	29	9	10	31	20	36	69
IV	1	0	0	0	1	2	100
Total	146	91	100	62	55	100	38

Classification of Severity of Lesion (after Holmes and Geniles 1956)

Group I — Normal feet
Group II — Peeling and/or Maceration
Group III Erythema maceration/peeling and raw areas or slight fissures
Group IV Fissures or dermatitis
Group V Vesicles (none detected)

It is now appreciated that the presence of lesions does not imply dermatophyte infection and the findings in the present study again demonstrated this to be the case

b **Infection**

Nineteen men (13 per cent) were found to have tinea pedis on laboratory examination Four of these men (21 per cent) had clinically normal feet Twelve cases (63 per cent) occurred in the heavy footwear section of the crew

Table II
Incidence of Infection Related to Footwear and Clinical Lesions

Type of Footwear	*Number of men with proven tinea pedis*		
	With Lesions	*Without Lesions**	*Subtotals and % of Total*
Sandals	5	2	7 (37%)
Steaming Boots	10	2	12 (63)
Total	15	4	19

**These lesion free carriers probably represent recapture or resolving infections (English et al 1961)*

The frequency of infection in this latter group was 21 8 per cent compared with 7 6 per cent for those men wearing only sandals a difference in incidence which is statistically significant *Trichophyton interdigitale* var *interdigitale* was responsible for eight cases of infection seven cases being due to *Trichophyton rubrum* and one to *Epidermophyton floccosum* Three cases were positive on microscopy only in spite of repeated culture The high relative incidence of *T rubrum* infections is noteworthy the overall infection rate for this fungus being 4 8 per cent

Analysis of cases in relation to showering facilities did not yield any significant bias towards one particular bathroom This lack of significant grouping also applied to *T rubrum* infections

Table III
Species of Dermatophyte Related to Footwear

Species	*Number of Infections in Sandal Group*	*Number of Infections in Heavy Footwear Group*	*Subtotals and % of Total No of Infections*
T Interdigitale	2 (25 %)	6 (75 %)	8 (50 %)
T Rubrum	3 (42 9 %)	4 (57 1 %)	7 (43 8 %)
E Floccosum	0	1	1 (6 2 %)
Total	5	11	16

Table IV
[illegible] Related to Showering Facilities

	[illegible]	No. of Men Infected	Species Isolated		
			T. inter-digitale	T. rubrum	E. floccosum
[illegible] I	[illegible]	1	2	0	0
Barracks II	[illegible]	8	4	[illegible]	1
[illegible] III	[illegible]	5	3	[illegible]	0

No association was detected between frequency of infection and either length of service in the Royal Navy or in the submarine service nor was there any association with age although the range of the latter was relatively narrow (Fig 1)

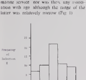

Fig 1 Frequency of infection related to length of Service in the Royal Navy

Discussion

The incidence of clinical disease (38 3 per cent) was very similar to that found in previous surveys although many of the lesions in this series were trivial (46 4 per cent Group II lesions) being characterised by minor degrees of peeling and maceration Copland (1952) found lesions in 45 8 per cent of a crew joining one of HM Ships English and Gibson (1959) found 40 3 per cent of senior schoolboys affected and Gentles and Evans (1973) 45 1 per cent of bathers at a public swimming bath

A number of studies has demonstrated that lesions suggestive of tinea pedis are exacerbated by wearing heavy foot attire (Davies 1951 and 1952 English Gibson and Duncan 1960) Doupagne (1957) found that tinea pedis occurred among Congolese soldiers wearing heavy boots and socks but not among the native civilian population who wore light socks and sandals or went barefoot In the present study clinical disease was significantly more prevalent in the heavy footwear group of men lesions being present in 54 5 per cent of this group compared with 28 5 per cent of the sandal group – these percentages are significantly different at the 5 per cent level Severe clinical disease was not encountered amongst the crew there being only one Group IV and no Group V lesions Previous studies have consistently demonstrated that clinical disease bears a very limited relationship to mycologically proven tinea pedis (Muskatblit 1933 Hopkins *et al* 1947 Holmes and Gentles 1956 English and Gibson 1959 Gentles and Evans, 1973) and this was again demonstrated Only 11 5 per cent of men with Group II lesions were found to be infected with dermatophytes compared with 41 3 per cent of those with Group III lesions Twenty one per cent of infected men had clinically normal feet

The incidence of mycologically proven disease (13 per cent) was relatively low for a group of adult males In their survey of coalminers Gentles and Holmes (1957) found the infection rate to vary from 16 to 60 per cent in pits with showers English and Turvey (1968) in a survey of new

patients attending a chiropody clinic found 23 per cent of adult males to be infected and in the Gentles and Evans (1973) study of tinea pedis in bathers the incidence of infection was 21·5 per cent for a similar group. These figures correlate with the incidence of infection in the heavy footwear section of the crew (21·8 per cent) in the present study.

The incidence in the sandals only group (17·6 per cent) compares with that found previously in younger males viz. 6·6 per cent for senior schoolboys in Bristol (English and Gibson 1959) and 7·8 per cent for 12-15 year old schoolboys using a public swimming bath (Gentles and Evans 1973).

The difference in incidence between the two footwear groups is statistically significant at the 5 per cent level and supports the findings of English *et al* (1960) in their study of tinea pedis in Bristol school children. They concluded their investigations into different forms of footwear by suggesting that the well ventilated footwear worn by girls may be important in keeping their infection rate low (1·6 per cent) relative to that in boys (6·6 per cent).

The incidence of infection with *T rubrum* was relatively high (4·8 per cent). English and Turvey (1968) found 3·1 per cent of infections to be caused by this fungus in new patients attending a chiropody clinic and Gentles and Evans (1973) demonstrated that it was responsible for 1·16 per cent of cases of tinea pedis in their bathing community.

Unfortunately the numbers involved in the present study were too small to draw any firm conclusions about the relative incidence of *T rubrum* infections but it may be observed that the great majority of men had served abroad during their naval careers and that all those infected with *T rubrum* had done so. Failure to demonstrate any degree of prevalence of infection in a particular bathroom may reflect the relatively short period of time over which the study was performed.

It is reasonable to conclude that confinement within a nuclear submarine does not result in epidemic tinea pedis and that one of the major limiting factors is the wearing of well ventilated footwear by all men for the greater part of each day.

Acknowledgments

I am greatly indebted to Dr J. C. Gentles and his staff of the Department of Medical Mycology, University of Glasgow for their help with planning this study, their identification and classification of enlitres and for undertaking repeat laboratory examinations.

My thanks are also due to the Commanding Officer and crew of HMS/M *Resolution* (Starboard) for the good humoured manner in which they accepted the assault on their extremities.

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EXERCISE MYOGLOBINEMIA AND ACUTE EXERTIONAL RHABDOMYOLYSIS

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Twenty-one Marine recruits in three training programmes at the Marine Corps Recruit Depot Parris Island SC were prospectively studied for one week for the presence of myoglobinemia and development of clinical rhabdomyolysis. Myoglobinemia was found in two thirds of the recruits at least once during the study period despite the absence of clinical symptoms. Serum myoglobin value ranged from 0 30 to 3 60 g/ml and correlated poorly with serum levels of creatine phosphokinase glutamic oxaloacetic transaminase and lactic dehydrogenase. With the exception of one recruit believed to have subclinical exertional rhabdomyolysis, those recruits in apparently poorer physical condition had higher average daily serum myoglobin and enzyme levels. Eleven Marine recruits who were hospitalised for exertional rhabdomyolysis are compared to the asymptomatic recruits. Serum myoglobin and enzyme concentrations were 10 to 100 times greater in the hospitalised men than in asymptomatic recruits (U)

The prevalence of abnormal haemoglobins among a group of Ghanaian naval ratings*

O. K. Ahuah

ABSTRACT

A small group of Ghanaian naval ratings in the UK for a short period were examined to determine their haemoglobin status which could under active Service conditions significantly affect their employability. The distribution of this trait in this group was found to be Hb AS 20 per cent, Hb AC 3 per cent, Hb AA 77 per cent. Parallel examination of haemoglobin by electrophoresis and by sickledex test which is cheaper and less technically demanding confirmed the efficiency of the latter test.

The general population of Ghana as of negro populations have in their blood some abnormal types of haemoglobin the commonest being the Haemoglobin S This occurs in the homozygons form as SS or as the heterozygous form with the normal haemoglobin A as AS On account of the general state of ill-health associated with the homozygous state the children with this blood rarely reach adulthood hence its rarity in the adult population With the heterozygous state however there is a prevalence of 20 per cent in the population (Konotey-Ahulu 1972)

On the grounds of general ill-health the homozygous group if they ever apply for entry to the Armed Services are excluded at recruitment examinations but since the heterozygotes show normal good health there is no barrier against their selection for service It is known however that this group are at risk under certain conditions and are liable to develop complications such as splenic infarctions and abdominal emergencies precipitated by both local and general hypoxia

General hypoxia may be experienced in unpressurised aircraft at high altitudes and under general anaesthesia with adequate oxygenation Local hypoxia may occur following trauma gun shot wounds or vascular disease

The aim of this project was to determine the extent of the hazards arising from the Hb AS status existing in an unselected group of Ghanaian Naval ratings who might during their service be exposed to general or local hypoxic stresses

A group of Ghanaian ratings were available in the UK for a short period With the permission of their Commanding Officer this group was examined and with their informed consent 2·5 ml of blood was taken by venepuncture This specimen was examined by haemoglobin electrophoresis and by sickledex test in parallel

Results Electrophoresis

1 Hb AS — 7 (20 per cent)
Hb AC — 1 (2·86 per cent)
Hb AA — 27 (77·14 per cent)

This confirmed the expected incidence of Hb AS at a prevalence of about 20 per cent in the Ghanaian population

2 All specimens showing Hb AS on electrophoresis gave a positive result on sickledex testing the remainder all being negative to this test In this series there was therefore confirmation of the efficiency of the cheaper and less technically demanding sickledex test in

*This work was carried out as part of a training programme conducted at RN Hospital Haslar under the supervision of the Professor of Naval Medicine

screening for haemoglobins, though it must be acknowledged that the numbers here are small

Discussion

The incidence of 20 per cent Hb AS status in Ghanaian active service ratings does raise certain questions relevant to both health care and personnel selection for certain occupations within the Armed Services Various writers have discussed the particular stresses which may precipitate adverse reactions in those carrying the sickle cell trait (Murphy 1973, Heller 1973) but others question whether these reactions are attributable only to the Hb AS content of the blood (Heller 1973) Konotey Ahulu (1972) agrees however that certain physical stresses are health hazards, but questions the value of identifying the Hb AS without quantifying the A A and S content of the blood

In practice however the danger exists and in the military service where physical fitness cannot be compromised in any circumstances it is important to advise soldiers on their choice of careers with knowledge of their genetic haemoglobin status in mind Thus sicklers should be dissuaded from going into diving where the possible hypoxic stresses can drive them into crisis

Apart from the choice of careers there is the need for extra care when such people are ill for certain conditions such as shock, haemorrhage or burns general anaesthesia and its complications of hypoxia and acidosis post operative wound infections and any severe infections particularly those affecting pulmonary oxygenation such as pneumonia may all precipitate the sickling process Further it must be stressed that trauma to limbs such as leads to local anoxia may also precipitate the process and it is to this type of injury that the Serviceman is particularly prone.

Since the carriers of sickle-cell trait form a large proportion of the population and are fit unless they are challenged by particular stresses it is not recommended that they be excluded at recruitment but rather that those affected should be easily identifiable in the field since it is essential to be aware of the possibility of their sickling complications from the onset of the clinical management of their disorder It is therefore recommended that Hb S screening be incorporated in the recruit entry examination routine and the result recorded on their medical documents and identification card

The presence of a lone Hb AC is no surprise in a population that is mainly southern in its distribution for the trait is highly prevalent in Northern Ghana at about 20 per cent reducing rather sharply towards the south (about 1 per cent) east and west Since there is no bias against northerners during recruitment any number can come in at any time It is therefore obvious that a prevalence rate of between one and 20 per cent can be postulated The exact prevalence is not yet known and a survey on this aspect would be valuable

In any case the impact of SC carriers should also be reviewed It is not as serious as the SS disease itself but still has its complications such as sudden onset of blindness due to retinal detachment haemolytic anaemia with splenomegaly, and the tendency to go into crisis under adverse conditions as with the Hb AS it therefore needs the same management as the latter The important thing however is to know of its existence

The cost of screening recruits by haemoglobin electrophoresis would be high and demand sophisticated technical ability it would, however, detect all haemoglobin disorders

The sickledex test is however, easy to perform can be carried out by very unsophisticated technical personnel and is cheap costing some 35p (one cedi) per test. A commercial manufacturer is in

vestigating the possibility of automating this test with a view to making it even cheaper. It does however have the disadvantage of recognising only the S haemoglobin.

Acknowledgment

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PUBLICATION BY RN MEDICAL OFFICERS—ABSTRACT

ELLIOTT D. H. HEAD P. W. (1974) Swimmer's ear. *British Medical Journal* 3 533

The authors state their belief that the advice on the prevention of otitis externa with particular reference to underwater swimmers and scuba diving by use of ear plugs is potentially harmful. This is discussed and it is observed that in the macerated epithelium often associated with frequent diving and high humidity in the tropics fungal infection with Aspergillus or Candida are often overlooked. Treatment of only Gram negative or Gram positive organisms in such cases leads to the well known high recurrence rate of otitis externa. For many years it has been naval practice to assume both types of infection are present. The follow up therapy of 2% salicylic acid meal once weekly for 2 months has proved most effective in desquamating epithelium which may still harbour fungal elements.

A preliminary study into Factors Predisposing Mountaineers to High Altitude Pulmonary Oedema

C J K Bulstrode

ABSTRACT

High Altitude Pul[illegible] (HAPO) is an rapidly progressive [illegible] [illegible] developing [illegible] climbing to high altitudes [illegible]

A short [illegible] on Mt Ke[illegible] [illegible] people [illegible] [illegible] might be [illegible] [illegible] of HAPO

Mt Ke[illegible]

[illegible] HAPO

Introduction

High Altitude Pulmonary Oedema (HAPO) as described by Houston (1960) is an acute rapidly progressive and sometimes fatal respiratory disorder developing in healthy mountaineers climbing to high altitudes. In the last 10 years oedema of other organs has been described as occurring under similar conditions and Pines (1974) has suggested that HAPO is simply one manifestation of a broader syndrome 'High Altitude Oedema'.

In the development of a case of HAPO the first symptoms are often a dramatic decline in the ability of the subject to keep up with the rest of the party. As this condition can strike the [illegible] fittest and most active member of the party the change is very noticeable. Most patients complain of difficulty in breathing sometimes accompanied by a dry unproductive cough and substernal discomfort or pain. These symptoms may be masked or accompanied by disorientation, lassitude or obstinacy. There may also be symptoms of Acute Mountain Sickness (AMS) with nausea, vomiting, headache and pains in the calves. The pulmonary oedema increases rapidly and within hours the patient may be coughing up mucoid frothy sputum which may be tinged with blood. The patient is anxious and agitated with fast irregular breathing, tachycardia and sometimes a slight pyrexia. Cyanosis is not always apparent but delirium and coma

supervene rapidly and death may occur within two to 12 hours

The pulmonary oedema can be reversed even at a late stage by using a large intravenous dose of Frusemide (60 mgs) or by increasing the partial pressure of the oxygen supplied to the lungs either by giving the patient pure oxygen by removing him to a lower altitude or by instituting intermittent positive pressure ventilation.

Aims

The purpose of this project was to investigate the changes in electrolyte and water distribution occurring in people who climb rapidly to altitude and to discover to what extent these might be responsible for the development of HAPO

Techniques

A short study was carried out on subjects climbing Mount Kenya during July and August 1974 In the first part of the study 20 volunteers were obtained from the British Army who were training in the area Unfortunately only seven of these succeeded in climbing to the first camp at 14 500 feet and so only the results from these seven could be used The second part of the study was carried out on seven acclimatised members of the Mountain Rescue Team on a training exercise (Table I)

The study consisted of taking a blood pressure pulse and samples of urine and venous blood before the ascent at the highest point and in the case of the first study on return to base camp During the study subjects recorded the amount of fluid drunk urine passed and any symptoms of acute mountain sickness and cough The blood samples were analysed for electrolytes packed cell volume and mean cell volume The urine samples were analysed for electrolytes The plasma potassium was not measured as slight haemolysis of blood samples occurred during descent of the mountain

Analysis of Samples

Haematology was carried out on a Coulter FN system

Sodium and Potassium Corning Eel Model 150 Flame Photometer

Chloride Schales and Schales (1941)

Results

In each study the results from the seven subjects were used to calculate the mean and standard deviation for each parameter

Table 1 Conditions of Study

	Subjects	*Acclimatisation*	*Speed of Ascent*	*When sample taken*
Study 1	7 soldiers British Army Age 20–30 years	1 month at 3 000–5 000 ft No high altitude experience	Lorry to 8 500 ft 12 hrs rest Lorry to 10 000 ft 10 hrs to 14 500 ft 12 hrs rest 5 hrs to 16 000 ft	Immediately on arrival at 16 000 ft
Study 2	4 Kikuya rangers age 20–30 years 3 Caucasians ages 24 31 & 45	Live permanently at 8 500 ft Regular trips to 16 300 ft	4 hrs. to 14 500 ft 3 days moving between 14 500 ft and 16 300 ft	3 days after arriving at 14 500ft

at every position It was not possible to test the significance of changes between stations due to the small size of the samples

Systolic blood pressure

There was a drop in systolic blood pressure on ascent which was reversed on return to base camp The drop in systolic blood pressure was more marked in the unacclimatised group (from a mean of 129 to 119) than in the acclimatised group (from 130 to 125)

Diastolic blood pressure

The diastolic pressure fell in the unacclimatised group from 84 to 79 and rose in the acclimatised group from 84 to 88 These changes were not as large as those occurring in the systolic pressure

Pulse

In the unacclimatised group there was a rise in resting pulse from 88 to 99 which did not reverse immediately on descent The acclimatised group did not show so great a rise

Packed Cell Volume (PCV) and Mean Cell Volume (MCV)

There was no change in PCV nor MCV in either study

Plasma Sodium and Plasma Chloride

The plasma sodium and to a lesser extent plasma chloride rose in both studies on ascending the mountain In Study 1 the plasma sodium did not fall immediately on return to base camp

Urine electrolytes

The changes in urinary electrolytes were very slight but overall the electrolytes in the urines of the unacclimatised group showed a slight rise while those in the acclimatised group showed a slight fall at

Table 2 The means at different stations Study 1 (7 unacclimatised British Soldiers)

	ASCENT				*DESCENT*			
	Base Camp		*Top Camp*		*Top Camp*		*Base Camp*	
Parameter	Mean	S D	Mean	S D	Mean	S D	Mean	S D
Systolic mm Hg	129	7 6	119	12 8	119	12 8	132	
Diastolic mm Hg	84	7 9	79	10 9	79	10 9	83	12 5
Pulse beats min	88	8 2	99	13 9	99	13 9	96	11 5
Mean Cell Volume	89	6 0	90	2 7	90	2 7	89	4 4
Packed Cell Volume	49	3 9	49	2 0	49	2 0	47	2 2
Plasma Na mEq/l	133	3 5	141	3 7	141	3 7	141	3 0
Plasma Cl mEq l	103	3 9	108	2 6	108	2 6	106	3 3
Urine Na mEq/l	125	66 0	143	87 0	143	87 0	145	37 0
Urine K mEq l	81	37 0	96	38 0	96	38 0	83	36 0
Urine Cl mEq l	171	96 0	174	88 0	174	88 0	153	42 0

	Day 1	Day 2
Water intake litres	0 9	0 6
Urine output litres	0 5	0 7

Table 2 (continued)
Study 2 17 acclimatised Mountain Rescue Team)

	Base Camp		Top Camp	
Parameter	Mean	S D	Mean	S D
Systolic mm Hg	130	17 0	125	16 0
Diastolic mm Hg	84	16 0	88	14 0
Pulse beats/min	87	18 0	89	14 0
Mean Cell Volume	90	4 0	90	4 0
Packed Cell Volume	53	5 0	52	5 0
Plasma Na mEq/l	134	4 0	136	3 0
Plasma Cl mEq/l	98	2 0	102	5 0
Urine Na mEq/l	107	70 0	101	72 0
Urine K mEq/l	68	30 0	36	22 0
Urine Cl mEq/l	133	76 0	132	90 0

	Day 1	Day 2	Day 3	Day 4	Day 5
Water intake litres	0 8	1 2	1 4	0 9	1 0
Urine output litres	0 6	1 0	1 2	1 0	1 2

altitude Both sets of samples were taken at the same time of day

Fluid balance

Both water intake and urine output had to be measured to the nearest mugful (500 mls) which gave an accuracy of not less than 500 mls per day Both fluid intake and urine output in both studies was very low with average intakes per day of less than 1 litre and outputs in the same range

Discussion

A fall in systolic pressure with increasing altitude has been described (Rotta *et al* 1956) and is believed to be associated with a rise in pulmonary artery pressure and a transfer of a large amount of blood from the systemic circulation into the pulmonary circuit The effect is believed to be in response to hypoxia (Roy *et al* 1969) This effect may predispose subjects to pulmonary oedema but occurs immediately on reaching altitude while pulmonary oedema commonly takes between 24 and 72 hours to develop

Climbing Mount Kenya is very strenuous exercise under circumstances when sweat rates as high as 1 5 litres/hour and a salt loss of 3 5 grams/litre could occur (Ganong 1969) Despite this the fluid balance of subjects in both studies showed that fluid intake only exceeded urine output by on average less than 100 mls/day It is possible that the fluid balance charts were not filled in completely but the author's fluid chart does not differ significantly from the other subjects and a

more likely reason for the low fluid intake is that the symptoms of acute mountain sickness at least in the unacclimatised subjects make both food and fluids unpalatable for the first few days at altitude. During a rescue on the mountain the author found that he lost 6 kgs weight in 48 hours after rapidly ascending and descending the mountain. This weight was subsequently regained in 24 hours and so would appear to be directly due to fluid loss. It is unfortunate that scales were not available during this study as the changes in the Packed Cell Volume and Mean Cell Volume suggest that there was no dehydration in the vascular or intra cellular compartment of the subjects studied. The plasma sodium in unacclimatised subjects actually rose during ascent of the mountain despite the high sweat rate. This rise in plasma sodium would not appear to be connected with the development of pulmonary oedema as a blood sample taken immediately after a porter collapsed with HAPO showed a plasma sodium of 130 mEq/litre.

It would seem possible that HAPO may develop after a latent period of dehydration caused by heavy sweating and low fluid intake caused by acute mountain sickness. The subsequent rehydration after recovery from acute mountain sickness might lead to an overload of the circulation especially the pulmonary circuit for reasons mentioned above. Capillary hydrostatic pressure would then exceed colloidal osmotic pressure and oedema would develop. The efficiency of the lungs gas transfer would therefore decrease and a vicious circle of increasing hypoxia leading to increasing oedema results. It is of interest to note that although Mount Kilimanjaro is considerably higher than Mount Kenya and is visited by as many if not more tourists every year there have been no cases of HAPO recorded from Mount Kilimanjaro while it is commonplace on Mount Kenya. A possible explanation may be that water is scarce on Mount Kilimanjaro and must be carried up from 10 000 ft while it is available on Mount Kenya at 16 000 ft (almost as high as most tourists go). This means that rehydration on Mount Kilimanjaro may not occur until after the descent when hypoxia is no longer significant while rehydration on Mount Kenya may occur at 16 000 ft where the subject may still be hypoxic.

Further studies of electrolytes (including potassium) and total body fluids (by weighing) would be very useful and might enable recommendations on salt and fluid intake to be made to mountaineers which would reduce the chances of developing High Altitude Oedema.

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Assignment—Suez*

Charles W Evans

Introduction

The early history of the Red Sea Canal is confused and uncertain and much is based on the interpretation of pictures and engravings Probably in early times the Red Sea and the Mediterranean met where the Isthmus of Suez now lies The country on either side was then very different Rain fell and the vast areas of what is now desert were grassy plains

By 2000 B C the land had risen and the seas were divided Lake Timsah and the Bitter Lakes were still part of the Red Sea but between the sites of the modern towns of Ismailia and El Kantara there was dry land The Nile in those days had seven branches and the most easterly the Pelusiac branch passed within 30 miles of Ismailia on its way to the sea near El Kantara The first canal linking the Mediterranean and the Red Sea was probably dug during the reign of Senonsret III and ran from what is now Lake Timsah to this branch of the Nile near the present day town of Zagazig.

This canal existed from 2000 BC until the Persian conquest It saw the arrival of the Children of Israel in Egypt after famine had driven them from their own lands It saw their rise to power probably during the time of the Pharaohs Ikhnaton and Tutankamen their enslavement under Rameses II and the Exodus either during the reign of Rameses II or his son Merneptah Where Moses led his tribe across the Red Sea is not known but perhaps they crossed between Suez and Ismailia helped by strong winds and spring tides

In 510 BC the Persians conquered Egypt and Darius I repaired the canal of the Pharaohs The Bitter Lakes were becoming separated from the Red Sea by this time due to the rising of the land and communication with the Red Sea was only possible during the Nile flood

In 333 BC Alexander conquered Egypt and Ptolemy II in 288 BC re-dug the Persian canal and also dug a new section linking the Bitter Lakes to the Red Sea

In 30 BC the Romans came to power in Egypt and the canal which had fallen into disuse due to the drying up of the Pelusiac branch of the Nile was revived in 98 AD and extended to Cairo This canal existed until the end of the Eighth Century when it

*Extract published in Medical Department Bulletin 1975 No 4

was filled in and the Mediterranean and the Red Sea were separated for eleven centuries Lake Timsah dried up existing only as a shallow depression in the sand and the water level in the Bitter Lakes was much lower than it is today

The building of the Suez canal by de Lesseps between 1859 and 1869 was an enormous undertaking The Sweetwater Canal from Cairo to Ismailia was built between 1857 and 1862 to provide fresh water for the canal zone Before 1862 the work force was dependent upon wells and was restricted to 5 000 men but with the availability of water it grew to 30 000 The de Lesseps canal was only 60 metres wide and 6 5 metres deep but much of the work had to be done by hand and 120,000 men are said to have died building it

The Canal was run successfully under British and French control attracting a growing volume of trade and being enlarged on various occasions until by 1956 nearly all of it was 200 metres wide and 11 3 metres deep The Egyptians have since widened a few sections and dredged it to 12 metres

In 1956 President Nasser nationalised the Canal the Israelis attacked the Sinai province the Canal was blocked with a number of sunken ships and the Anglo French Military intervention took place in the Canal Zone The Canal was reopened in 1957 and ran successfully under Egyptian control for 10 years In 1967 during the June war the Canal was again blocked by the Egyptians with 12 ships and 14 ships were trapped in the Lakes The Israelis occupied Sinai and the East bank of the Canal

During the seven years up to October 1973 a vast quantity of ordnance was dropped or deliberately placed in and around the Canal and most of the equipment and installations were damaged or destroyed The cities and towns of the Canal Zone were bombed and shelled the civilian population left and the whole area came under military control

On October 6 1973 the Egyptians launched attacks across the Canal at five main points between El Kantara and Suez The first Egyptians across the Canal were commandos who successfully eliminated the Israeli fixed defences

Water cannon were then used to cut gaps in the steep sand walls of the Canal Eventually 12 pontoon bridges and some 50 ferries were carrying men and equipment to the East bank

On October 15 the Israelis began their counter attack across the Canal under the dashing General Sharon Unobserved by the Egyptians a small force crossed in the early hours of October 16 in rubber boats Tanks and more troops were carried across in barges and despite heavy Egyptian attacks a bridge was established at Deversoir on October 17 Within three days a causeway had been built across the Canal The Israeli forces turned south to Suez and north to Ismailia cutting off the Third Army on the East bank and capturing or destroying the SAM sites on the West bank

The fighting was finally stopped on October 24 1973 as a result of international pressure on the combatants and the long drawn out negotiations for withdrawals by both sides began their weary course Eventually with the Egyptian and Israeli forces separated in Sinai by a thin screen of UN troops it was possible to start the work of clearing and rehabilitating the Canal

The Operation

Operation Rheostat was the RN side of a combined British and American operation to clear the Canal of unexploded ordnance and prepare the way for salvage and dredging operations.

With the Minehunters HMS *Wilton*, *Bossington* and *Maxton* clearing the way

HMS *Abdiel* entered Port Said on April 7 1974. A mooring had been prepared some 75 metres off with a walkashore which gave some protection from the insects and rats and made security easier. The first impression of the Port was of emptiness. Buildings and the Dockyard were damaged, paint peeled in the sun, cranes hee-ed at strange angles or lay on the ground, doors and windows were walled up and the shutters closed. The people had left seven years before and only the Army and a small Naval force remained. When ashore in the town we were confined within a small area, the rest being a military zone, but the signs of war were everywhere. Soldiers guarded the rubble strewn streets, many blocked with wire entanglements and on every corner there were shelters and machine gun posts dug in the pavement. Tanks and armoured personnel carriers lurked in the shadows, army jeeps and trucks abounded, but there were no private cars. It seemed strange that the flowers should grow so well among the ruins, cascades of colour over the fallen stones, reminiscent perhaps of the poppies among the shell craters of Flanders or the willowherb in London.

The power stations and water works had been damaged, but had managed to keep working with reduced output. Only one of the four hospitals in the town had survived undamaged, a 100 bed charity hospital that had not been painted or re-equipped for at least seven years. For the first few days this hospital was our only medical back up.

For the first two weeks the nights were disturbed by the constant dropping of scare charges around the ship. The ships' bottoms were searched daily, often at a most uncivilised hour, and on three occasions our armed sentries reported swimmers in the water which resulted in a barrage of scare charges being rained on innocent rubbish floating by, and another ship's bottom search at dead of night. Perhaps we were over cautious, but the practice did no one any harm. The divers at least had plenty to do.

For the first week the minehunting operations were confined to the harbour while *Abdiel* supplied and repaired the Hunters, entertained the World's press and Egyptian officials, and the Sqnadron awaited the arrival of USS *Iwo Jima* with the American Airborne Mine Countermeasures Unit. This unit was intended to detonate all acoustically or magnetically triggered devices though it was pretty certain that no such devices were in the Canal. This unit operates by towing either a magnetic device or a combined acoustic and magnetic device behind a helicopter. It is impressive and very noisy and is a useful precursor of a minehunting task though it cannot replace it.

HMS [illegible] leading HMS [illegible]

RN Minehunters are slower and less exotic, but perhaps more reliable. With the Hunter anchored the sonar is used to make circular searches of the sea bed. If the contact is thought to be worth investigation a Gemini is guided to the area and a diver is sent down to investigate. Doing a series of circular searches in this way the Hunters were often able to clear 2 Kms of the Canal a day. For this type of work it is desirable to have silent non-magnetic diving sets and skilled divers. The visibility

is frequently nil and the search must be made by touch possibly in deep mud. The contact must be identified and if necessary countercharged and blown up though some were raised for identification.

By the end of April the northern part of the Canal had been swept of acoustic and magnetic mines and none were found. The Fleet Clearance Diving Team arrived and the job of cleaning up the canal began. The minehunters worked in the central part of the Canal and on the slopping banks to a depth of three metres. Every contact was dived on, explosives were blown up and obstructions likely to damage a dredger were marked for demolition. By mid-August some 325 items had been marked and about 10 000 contacts dived on and identified. Objects found included ammunition barges, tanks, trucks, sunken pontoons, corpses and personal weapons and a full spectrum of ordnance from rockets to rifle ammunition. The Fleet Team had the dangerous job of searching the banks and the dock basins visually or by touch between two and eight metres and also to survey the wrecks of the 14 ships and some 40 smaller craft in the Canal. Any explosives there were removed and the wrecks marked for later salvage by the American company Murphy Pacific. They discovered 3 500 items of ordnance by mid-August, though many small pieces of explosive, such as fragments of TNT or unexploded scare charges, were considered safe and left in the Canal.

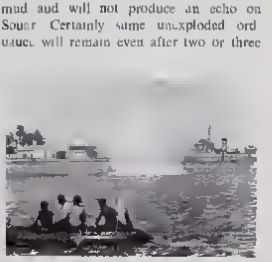
French and Egyptian diving teams worked between three metres and the surface where the visibility was generally good and the bottom free from mud. By May 29 the Northern stretch of the Canal from Port Said to Ismailia had been largely cleared and *Abukir* moved down to Ismailia so as to be closer to the Hunters. The American Airborne Mine Countermeasures Unit was approaching the end of its task — having found no acoustic or magnetic

Members of the Fleet Clearance Diving Team taking a break from the Mine

mines — and on June 4 the Unit departed in USS *Inchon*.

Diving in the Bitter Lake presented an unusual problem with pools of very dense water lying beneath the normal salt water in the deeper part of the Lake. The density of this water of around 1 t meant that a diver had to increase his total weight by about 10 per cent to enable him to swim down into it.

The degree of clearance achieved is a matter of conjecture. Bombs can penetrate sand and mud for up to 10 metres. Many of the mortar bombs, grenades and mines in the Canal will have become buried in the mud and will not produce an echo on Sonar. Certainly some unexploded ordnance will remain even after two or three



Mine

hunts over the Canal and dredging prior to opening may produce further discoveries.

One notable hazard was the use by the local populace of explosives for fishing. Their usual weapon was an anti-tank mine from which the central part of the explosive was cut out and a pull igniter assembly inserted — simply a removable pin, plunger and primary charge. This they threw into the Canal and when the fish had returned they would pull on the string attached to the pin. Occasionally the mine would explode but more usually the only result was fragmentation of the case and the TNT charge. Sometimes the string broke. Detonation of these devices continued despite constant strong complaint from the nations clearing the Canal. Indeed the only casualty of the operation was caused by a fishing device.

By August 15 there remained only 15 Kms of the Canal to clear and about two weeks' work in Suez Bay. The Straits of Gubal which at one time the Squadron was expecting to have to clear were being cleared by a large Russian task force and apart from the need to hunt over some areas again the end of the operation was in sight. The vast majority of diving was in depths of 12·5 metres or less. The deepest diving was in Suez Bay to a depth of 36 metres but in near perfect conditions. There were no diving accidents or incidents of any significance.

Medical Aspect of the Operation

When we sailed for Egypt we had no recent medical information from the Canal Zone. It seemed probable that during seven years of sporadic fighting the previously existing disease control machinery would have broken down and as a result many diseases would have had a chance to establish themselves in the area. It was decided to inoculate the whole squadron against cholera, typhoid, paratyphoid and smallpox and to give a booster dose of polio vaccine. The Canal Zone was to be regarded as malarial until proved otherwise. Health education on the journey out covered such items as schistosomiasis, rabies, flies and their nasty habits and malaria and other mosquito borne diseases.

When eating ashore the inadvisability of eating in fly infested areas, eating elderly sweet creations, uncooked vegetables, milk, dairy products and meat and of putting ice in drinks was explained. For the galleys there was emphasis on cleanliness and on the washing of food. In an attempt to keep the galleys as clean areas all washable foods were washed in a 6 ppm chlorine solution before taken into the galley. Not all foods can be washed and the locally supplied bread remained a possible source of infection whenever it was used as it was not possible to toast or rebake it all. Later we were able to bake our own bread.

Shortly after arrival in Port Said I was able to visit the local water works which had been only lightly damaged during the war. An East German fast filtration and a French slow filtration system produced good water which coolormed to UK standards. Water was brought out to *Abdiel* by water barge which was cleaned and washed out by water works employees and was drunk without further treatment with no ill effects. A peculiarity of Port Said seems to be the 'Private Water Barge'. These sell water of less certain purity than the Suez Canal Authority (SCA) barges at a higher price.

During the first two weeks contact was made with the Canadian element of the United Nations Expeditionary Force then based in Cairo. They offered the services of their field hospital which was a remarkably well equipped unit with an air conditioned operating theatre, preparation rooms and an intensive care unit, and a very elegant compact portable dental unit. The wards were not air conditioned and

patients were usually flown out after operation Sadly despite rumours there were no elegant mini skirted nurses! The Canadians developed into good friends and later in Ismailia we used their dental services and they used our sailing dinghies and drank our beer

The market where the fruit vegetables and fish supplies to *Abdiel* were purchased was visited and a couple of chefs were taken so that they could see at first hand the reasons for washing vegetables The slaughterhouse was also visited and was not a place I would wish to see again The meat offered to *Abdiel* was of very poor quality and no chilled or frozen meat was available There was no evidence of any meat inspection For these reasons and for the fact that a Hunter going out on a 10 day task needed frozen meat we obtained meat initially from the Americans and later from Cyprus

The milk offered to *Abdiel* was unpasteurised and unpleasant and was presented in churns with a strange variety of things floating on the surface It is likely to be infected with tubercle bacilli brucellosis salmonellae and other contaminants This milk was not used Bottled pasteurised milk was available in Cairo but as there seemed to be no refrigerated transport it was not possible to use that source of supply We relied mainly on tinned milk with the occasional very welcome fresh milk from Cyprus

Casevac Procedure

For the first two weeks of the operation any casualties would have been brought to *Abdiel* by water — distances were short — and treated either in *Abdiel* or at the hospital in Port Said The RAF could have landed a Casevac aircraft at Ismailia within four hours of a request but due to the need to obtain diplomatic clearance for the flight it could have been much longer There was also a 90 minute journey on a very rough road from Port Said to Ismailia

With the arrival of the USS *Iwo Jima* on April 22 there was suddenly an excess of doctors A full combat surgical team was available in *Iwo Jima* there were two US Navy doctors in Ismailia and more important there were Casevac CH46 helicopters Any casualty would, in theory be winched into the helicopter either in a strop or Stokes litter and flown direct to the *Iwo Jima* When exercised this scheme did not go quite as smoothly as it should have mainly due to communications problems and a few changes were made This routine was in use, but not needed until June 3 when one of the divers in the Fleet Clearance Diving Team was injured by the explosion of an Egyptian fishing device made from an anti-tank mine He was fortunate that only the igniter assembly blew up and that the 12 lbs of TNT around it fragmented without exploding His injuries were not serious but had the mine exploded the results would have been different killing or injuring most of the Fleet Team

This incident showed up some serious shortcomings in the communications side of the Casevac routine which were corrected but the USS *Inchon* which had relieved *Iwo Jima* left the following day and the Casevac routine was changed again Three US Marine Corps CH46 SAR helicopters were left behind and these were available for Casevac work if needed Casualties were to be collected from the scene of the accident and flown to Ismailia airport where they would be met by either the USN MO or myself and according to the severity of the injuries either taken to the US Dispensary where we had pooled some of our equipment as it was closer to the airport than *Abdiel* and access was much easier or to the Egyptian hospital in Ismailia This is a modern hospital which worked through both Arab Israeli wars and the years between and had plenty of re

cent experience in war surgery Onward evacuation by the RAF from Ismailia could be arranged if required

In early July it became apparent that we could not always rely on the US helicopters and arrangements were made for the Finns (part of the UNEF force) to provide emergency treatment for any casualty in the Suez area Around Ismailia collection by road was possible as this area had already been hunted over and accidents were not expected In Port Said the Egyptian hospitals would provide any emergency cover required In July the Canadian field hospital moved a small detachment to Ismailia By mid-August they were able to provide first class dental care and also offered to provide stabilisation and minor surgery for any RN casualty arriving at Ismailia Also in mid-August the Polish hospital opened in Ismailia offering very good facilities 20 attractive nurses and clean air conditioned wards. This completed a very flexible Casevac scheme with substitutes at every point in the chain and meant that the RAF were unlikely to be required in a hurry in the later phases of the operation Early on however they might have been needed and it was reassuring to know that they were there

Habitability of the Ship

Air conditioning had been fitted to *Abdiel* just before her departure for Suez Because of the short notice it was of necessity a rather Heath Robinson job The units proved unreliable both intrinsically and because of the growth of marine plants and animals in their cooling circuits. Even with the units running many of the spaces were uncomfortably hot and when they failed conditions became very unpleasant. The galley reached dry bulb temperatures of 40 6 C and wet bulb temperatures of 34°C on most days in July and August even when the air conditioning system was working. Messdecks reached maximum dry bulb temperatures of 34 C and wet bulb 28 C HMS *Maxton's* air conditioning failed completely during the greater part of July but the crew spent the nights on deck avoiding the intolerable conditions below and work continued The heat though unpleasant was not a serious problem except in the galley The cooks did well to continue producing good food in such difficult conditions

The design of the WC bowls in *Abdiel* which are mostly of the low rather flat type is not really suitable in a hot and fly infested land Flushing was seldom able to produce the degree of cleanliness required and it is recommended that this design should be replaced

Flies and mosquitoes were a nuisance in Egypt They were attacked with Pyrethrum, Vapona repellants and most effective of all residual spraying of the superstructure of the ships The French minesweepers which were tied up alongside in the SCA basin in Ismailia were much more troubled by mosquitoes than we were but seemed to accept it.

Rats were a nuisance at times boarding *Abdiel* from the fuel barge and on occasion coming along the walkashore They were never able to take up residence in *Abdiel* or the Hunters but for a while did so in the Fleet Team launches Poison was put down in a deserted house near *Abdiel's* dustbins on the jetty and the rats were reduced in numbers The French ships moored alongside were often troubled with rats despite the dogs they carried onboard

Bathing

Port Said and Suez are tidal and the harbours are therefore reasonably clean and safe for swimming Lake Timsah in which there were eventually seven ships is a largely stagnant salt water lake which has been more or less cut in half by a new road An overflow from the Sweetwater

Canal runs into the southern half of this lake which is now fresh water containing less than 0·05 grams of salt per litre This half of the lake is covered with water hyacinth and among the roots of this weed live the snails *Bulinus Truncatus* and *Biomphalaria Alexandrina* the intermediate hosts of *Schistosoma Haematobium* and *Mansoni* The water from the southern part of the lake runs into the northern part under a bridge carrying with it islands of water hyacinth in which the fresh water remains 'unsalted' for some time and in which the *Cercariae* remain viable Any one bathing or boating in Lake Timsah was advised to leave the weed islands alone and to keep 300 yards away from the bridge at which range the water was safely salty at 2·5 grams per litre By mid August the water in the lake was becoming polluted with the untreated sewage and fuel spillage from the ships (the town sewage is treated before discharge) and the western end was no longer fit for swimming Arrangements were made to swim from a small beach further down the Canal

Medical Supply and Resupply

Drugs and medical equipment for the operation were obtained from Greenock and from RN Hospital Haslar who provided a number of unusual items at short notice We were most grateful for their speed and efficiency Once in Suez our few requirements were met from Cyprus being delivered on RAF stores flights though we collected some drugs from Malta when *Abdiel* visited for five days in July The Canadians very kindly offered to help out if we ran short during the troubles in Cyprus but their help was not needed

Medicine during the Operation

A list of diseases likely to be encountered in Egypt is given in Table I The irrigated part of the country is full of disease and every peasant admitted to hospital is likely to have bilharziasis ankylostomiasis and tuberculosis in addition to the disease that brought him to hospital Some of the diseases were seen on visits to Egyptian hospitals but the squadron remained remarkably healthy and nothing unusual was seen, though one man was bitten by a dog and given antiserum

In the first six weeks at Port Said the commonest complaint was of diarrhoea usually mild and always controlled with Lomotil or Kaolin and Morphine. There were never more than 20 cases in a week in the squadron of 240 men and during the operation only 10 man days were lost due to diarrhoea This compared well with Canadian experience In the early days some 350 400 cases were being seen each week out of a total force of 950 men Later at Ismailia where the Canadians continued to have 70 100 cases a week we were seeing about five a week In addition to the large number of cases of non specific diarrhoea the Canadians were seeing 4 5 cases of shigellosis a week whereas the squadron had no proven cases The squadron had one case of amoebiasis in an officer who had been on a week's leave in Egypt The difference between the two groups both of whom imported much of their food and had their own cooks was thought to be the flies In the ships we were able to keep the number of flies very low whereas for those ashore it was more difficult

After two weeks in Port Said it became obvious from local advice and advice from Cairo (NAMRU and the Abassir Fever Hospital) that the area was malaria free Paludrine was therefore stopped and reintroduced when the ships moved south past El Kantara where there were many mosquitoes and the need was more obvious Once past El Kantara the crews were on Paludrin until a month after leaving the malarial area

In Ismailia in June, July and August the weather and the ship were uncomfortably

hot Cuts and mosquito bites did not heal well and secondary infection was frequent becoming the commonest complaint The low incidence of otitis externa and fungal infections was surprising. There had been some propaganda about heat exhaustion and heat stroke, and no case of either was seen Salty Limers containing 0 1 per cent of salt was provided in some of the hotter working spaces This concentration is almost tasteless in squash or coffee but spoils tea. This quantity of salt is used in the glucose solution that is the sole sustenance of Royal Marine crews on the Devizes to Westminster race and was also used on exercise with the Marines in the Far East with possible advantage

In June the United Nations had what was believed to be their 30th case of infectious hepatitis and also a case of paratyphoid which was initially reported as malaria and caused the US personnel to begin taking Chloroquine Egyptian doctors told me that infectious hepatitis was common in June July August and September when the flies were at their maximum Other sources indicated that paratyphoid was common in the summer months One case of each was seen in Cairo where I ran a clinic for the British Embassy Staff roughly every two weeks I was surprised to find that few of them were inoculated against typhoid and paratyphoid and none seemed to wash vegetables in chlorine solution They seemed to suffer more from diarrhoea than the squadron

Four psychiatric cases, two cases with a psychiatric flavour and one diver hurt in an explosion were evacuated to UK up to mid August Two of the psychiatric casualties were pre existing cases that might have been weeded out before the operation if the ships had carried a doctor The other two were caused by the stressful conditions under which they were working Perhaps a psychiatrist would have been of more use than a diving doctor

Recreation

Organising sport and recreation in a damaged country was one of the problems that was passed on to the doctor, assisted initially by a Royal Marine officer and later by a Chief PTI In Port Said any sports or amusements had to be of our own making An old sports club had been loaned to us by the Egyptian authorities and during the first few days a football pitch was cleared a bar was built tennis and volleyball courts set up and our Bosun dinghy and five canoes rigged and put into service The boats proved very popular and more were acquired when we arrived at Ismailia An Uts a Knockout type contest was organised which caused considerable merriment and very little damage We discovered after two weeks that the clubhouse so kindly loaned to us was used as a magazine by the Egyptian army and contained not less than 50 tons of high explosives This discovery coincided with a slight loss of interest in the club

The SCA arranged a weekend of sightseeing in Cairo at the end of April a pleasant time of year in Egypt Not everyone was interested in the history of Egypt but those who were saw a number of Mosques and Palaces the Museums the Old City the pyramids and the sphinx On later visits I was able to see much more and it is one of my great regrets that I was unable to see Luxor and some of the other remains in and around Lake Nasser The SCA also arranged a number of cabarets and Folk dances for the squadron which were usually excellent though we were surprised by the Egyptian concept of beauty Many of their belly dancers though fit were decidedly plump by British standards.

Facilities in Ismailia were very much better On the waters edge there was a sailing club which was used for the fleet

of Bosna dinghies by then three strong and a rowing club which had an old four and a sculling boat and where the canoes were stowed. A water ski club and a snb aqua club were formed and by mid August 12 people had obtained their dinghy helmsman's ticket about 40 had some expertence of water skiing and 14 had learnt a little about diving. Many people had used the canoes but only one had persevered and mastered a racing boat.

On land football volleyball and tennis were avarlab e and were organised with remarkable enthusiasm by the Chief PTI Leagne and knockont contests were organised weight training and circuit training were introduced and people one would never have suspected of such vices became interested and even fit. Aided by the warm water and a little cruelty all the ships non-swimmers passed their naval swimming test. Two more. It s a Knockout contests rudely retitled by the squadron 'It s a Cock up' were organised and caused much joy and only a little pain. Dreaming up improbable games for these events taxed both the doctor and CPTI to the limit.

Various road journeys to Suez and the urge to be first into the Red Sea resulted in a scheme to paddle there from Ismailia by canoe a distance of 85 Kms the last 28 of which and the channel between the Great and Little Bitter Lakes have tidal streams of up to four knots. After some planning six paddlers set forth to paddle one double canoe in relays with a Gemini as an escort vessel and a Land Rover following down with food water and extra fuel. Everything went wrong the Gemini broke down wasting an hour and the Land Rover became lost at one point but in the end we made it in a paddling time of nine hours. We were very sunburnt very thirsty and just a little tired. A canoe was thus the first British vessel to reach Suez beating HMS *Maxton* by some 24 hours but though the news of this remarkably useless achievement was released to the world's press with pictures only the *Daily Telegraph* and the *Daily Mirror* chose to publish it.

Stranded in the Great Bitter Lake and in Lake Timsah are 14 ships of various nations. They have been manned by care taker crews for the last seven years while two wars were fought over them. Two were sunk and are now listed as wrecks. Life cannot have been too bad for the crews as one of the ships was loaded with beer another with clothing and a third with cameras and transistor radios. Others were mostly loaded with grain oil and ores but one was reported to be full of explosives.

At Lima 15 Kms from the southern end of the Canal there is one of the crazier constructions. The Finns have built a sauna bath a torture they delight in inflicting on their visitors where one can move in a trice from 110 warmth of the Suez summer to a 240 inferno. It is pleasant to dive into the Canal afterwards. It may or may not be relevant that the Finnish Battalion had far less in the way of skin problems than other UNEF groups.

Travel and Personal Experiences

The first two weeks of the operation were spent in Port Said when one of the main interests was the presence of four Russian OSA missile boats and some smaller FPBs. I was able to visit the Egyptian Navy diving ship an ex Russian ing whose divers using rather buttered standard equipment do not exceed 200 ft.

The arrival of the American task force with additional doctors and the helicopter Casevac service meant that I was no longer tied to *Abdul* and was able to travel around more though at great personal risk because Egyptian drivers must be among the worst in the world! The horn is used more than the brakes and huge lorries drive

TABLE I

DISEASES COMMON IN THE CANAL ZONE

Amoebiasis	Most of the fruit and vegetables are likely to be contaminated
Ankylostomiasis	Common in the damp agricultural areas *Ascaris enterobius hymenolepis nana* and *trichuris* also occur
Bacillary Dysentery	*Shigellae* were frequently found by the UN laboratory
Brucellosis	Buffalo milk commonly used is unpasteurised infected and unpleasant
Non-specific Diarrhoea	The commonest disease among visitors to Egypt
Infectious Hepatitis	Occurs mainly in the summer months when the flies are at a maximum
Malaria	Contrary to WHO reports there is no *vivax* and *malariae malaria* throughout the irrigated agricultural areas of Egypt at present south from El Kantara in the Canal Zone. Port Said itself is malaria free. There is *falciparum malaria* at Aswan
Rabies	There are many stray dogs and anyone bitten by a dog should be treated as in JSP 311 the Memorandum on Immunological Procedure
Schistomiasis	Both *schistosoma haematobium* and *S mansoni* are found throughout the agricultural areas
Tuberculosis	Both bovine and human forms are common
Typhoid and Paratyphoid	Common
Trachoma	Common in the coastal areas
Typhus	Louse and flea borne typhus occurs

happily on which ever side of the road they please

My first journey out of Port Said was on April 20 to Deversoir some 15 Km south of Ismailia The outskirts of Port Said were very much damaged and there were several anti aircraft batteries protected behind earthworks The only bridge left standing across the El Manzala Canal was the railway bridge which was a little bent. The road bridge was destroyed in 1967 and no rebuilding had yet begun

South of El Kantara the farmers had returned to their land but many of the fields were ruined by drought citrus and mango groves were dead and irrigation ditches and pumps were destroyed The life of the Egyptian peasants cannot have changed much over the last 5 000 years. Their houses are still built of mud and reeds as they were in Bib'lical times The houses normally one storey box-like dwellings and it was often very hard to decide whether they were falling down were bombed or were just built that way Town planning and main drainage have not reached the villages yet though most have piped water supplies The farmers often work barefoot in the fields and are afflicted with hookworm amoebiasis and schistosomiasis (which existed 5 000 years ago evidence of the disease having been found in mummies) Oxen are used for ploughing working water pumps and threshing Camels unfriendly animals with chronic indigestion and an astonishing load carrying ability are used mainly off roads and horses and donkeys used mainly on roads The animals have a hard life but so do the people

The Deversoir causeway was built by the Israelis to move their troops across the Canal Built in three days it will take more than six months to remove Much of the stone that was included in it and which is proving very hard to remove, was piled on the Egyptian side waiting for a building project which never materialised

Shells mortar bombs and other explosives could be seen lying on the surface in many areas A number of peasant farmers around Ismailia have been killed or injured while working in their fields and the Egyptians have lost a good many men engaged in clearing land mines It is unwise to stray from established tracks

I was able to do a certain amount of diving during the operation mostly on *Abdiel's* bottom during the early days when terrorist interference was thought possible The Egyptians had lost an LCT and an FPB during the war due to Israeli frogmen and were very wary as a result Later I was able to do some minehunting diving with the teams on various occasions and also dived on a number of wrecks to look for explosives before the Salvage Team began work I never found anything more exciting than an anti personnel bomblet and a rocket pod other contacts being rocks or old pieces of metal but was present when *Manton's* team found and blew up a 1,000 Kg bomb which was impressive

On August 28 I handed over to Surgeon Lieutenant Hammer and flew back to UK

LETTER TO THE EDITOR

Sir,

In attempting to answer the fair criticisms contained in Dr Lowe's letter in the last Journal (Vol 61, p 59) on my article on the surgical removal of verrucae may I say that his experiences do relate to the NHS and it should be noted that my article was entitled 'A personal approach'. This means that he and I see the problem through different eyes: he on the one hand in a busy clinic treating many young people and I on the other attending Servicemen who have to be turned round as quickly as possible to full duties. These duties frequently entail an active life, working in hot conditions in galleys, engine rooms, climbing ladders, engaging on assault courses and so on.

It is difficult at sea to carry out lengthy formalin soaks because of the time involved (Dr Lowe's quotes speak for themselves namely 15 minutes daily for up to eight weeks — which is 14 hours of intermittent and at times painful treatment with an 80% cure rate) as opposed to my once-only 10 minute surgical removal. It is said that salicylic plasters succeed in only half the cases and while it may be true that after two years of no treatment 67% clear anyway, no patient who comes to a doctor wants to wait that long: he wants something to be done immediately. Dr Lowe says 'Curettage followed by diathermy is the most generally accepted surgical treatment for plantar warts' and with this I completely agree. But the scarring which he quotes in his next sentence in my experience is nothing to fear provided that the patient is seen once or twice at three weekly intervals so that the newly-formed less painful young scar can be shaved out with the flat blade of the knife. If a painful callus is also present this constitutes a chiropody or orthopaedic problem but again in my experience the patient's symptoms are now considerably reduced in any case by the absence of the verruca. The direct seeding of further small verrucae in the scar should not occur if adequate diathermy has been achieved at the initial operation.

Children have good healing flesh and rarely form any appreciable scarring or callus. Part of the purpose of my article was to explain a satisfactory method of gaining the patient's confidence and total anaesthesia by first freezing the area before the introduction of the hypodermic needle. Part of the failure of complete extirpation in my opinion is inadequate anaesthesia half way through removal. More anaesthetic is pumped in only to run straight out again and the patient will not allow the surgeon to proceed to the correct depth. I am happy to say that none of the children I have done have complained and this method is preferable to other longer and more uncomfortable procedures.

I think Dr Lowe makes an important point when he describes his own department as a busy wart clinic and, of course, it would not be practical to devote 10 minutes of a surgeon's time to each and every patient's individual warts. The most I have removed from one patient at one session is six and again both the patients I have treated, and myself, have found the method described least traumatic to mind and sole!

I am, etc.

R. H. Broughton
Surgeon Captain, Royal Navy
Senior Specialist in Dermatology

BOOK REVIEWS

A CONCISE SURGERY OF THE ACUTE ABDOMEN By John A Shepherd Pp 208 Edinburgh and London Churchill Living stone £5 50

This is a compact and comprehensive book on the diagnosis and management of acute abdominal conditions Chapters are arranged on an anatomical basis with additional chapters on special subjects such as Gastro-Intestinal Haemorrhage Medical Conditions associated with an Acute Abdomen and Gynaecological Disease This makes it an excellent reference book in the acute situation

It abounds in good clinical advice and encourages the surgeon to observe the basic clinical signs and to use his common sense in his approach to the diagnosis

It is aimed particularly at the surgeon preparing for higher qualifications yet will be appreciated by the established surgeon

It is presented in an attractive paper back edition at a moderate price **RJM**

DRUG DEPENDENCE By J H Willis Second edition Pp 136 London Faber and Faber £2 50 Paper back £1 00

This is an excellent little book It covers in an admirable way the practical points of drug dependence as it affects not only nurses and social workers but the medical profession as a whole

From one's experiences the information is accurate well balanced clearly laid out and easily found I would recommend this book as a very useful addition to any medical nursing or social workers library and in fact as an inexpensive handbook it would be well worth having if in contact with drug problems **DHM**

SYMPTOMS AND SIGNS IN CLINICAL MEDICINE. Chamberlain and Ogilvie Pp 623 9th edition Bristol John Wright & Sons £6 00

Students do ask which of the many books on the clinical examination of the patient they should read When confronted with that question my mind leaps to the great three — London Edinburgh and Liverpool were then place of origin Why do I not always recommend one to all students? Mainly because students vary themselves and while the content of the three books is very similar the emphasis presentation and the language of each is very different

The Ninth Edition of Chamberlain has gained much from its surgical counterpart It is beautifully produced with new illustrations added to the best of old familiar friends in previous editions It is much improved by the addition of historical data and small portraits of the distinguished teachers of the past Above all it reads well with an unhurried interesting progress through the systems Such a pace permits time for thought and allows the editors to discuss the importance of a social history with insight and humanity Throughout the object of study remains what he essentially is a patient seeking help

I like the emphasis on the timescale of the disease process Once this is appreciated by the differentiation of symptoms which leads easily into an application of the natural history of a student it provides the structure to which all other details learnt about a disease can be added with proper judgment on their significance and without impairing the clear view that is required to reach a diagnosis from the facts in the history

An interval on in a book on this subject is a chapter devoted to the endocrine system which achieves its objective by combining the physical manifestations of disease with the clinical and chemical signs of disorder in a logical manner Similarly the Glossary of some 14 pages is well constructed for the use of the clinical student at a time when economic factors are likely to preclude his possession of a medical dictionary

Which student would I advise to read this textbook rather than the other two books previously mentioned? The mere scholarly cultured man who is not at his best with the terse langlaus of instructional manuals the man with affection for a well produced book the man who prefers to take time and give thought to his reading. Perhaps this is a description of a poker ind physician who knows? **EJF**

ALDOSTERONE AND ALDOSTERONISM E J Ross MD FRCP Pp 501 London Lloyd Luke £8 00

I have a feeling that the rate of publication of new information on Aldosterone is falling off after more than a decade of intensive work This monograph is likely therefore to remain a standard work for some time and its publication is particularly well timed

Though splendidly comprehensive with an almost painful number of references, full pages it nonetheless carries the evidence of industry and erudition lightly since the text reads well being light and informative without ponderous periods There is also much information of general interest

The major part of the book is concerned with Aldosterone, its chemistry synthesis biological control and mechanism of action A useful chapter considers the role of the hormone in hemostasis leading on to considerations of the clinical features of aldosteronism hypoaldosteronism and finally the use of Aldosterone antagonistic drugs

In summary a splendid monograph which will be a valuable addition to a postgraduate library

and will probably have a reasonable long and effective shelf life on the reference shelf **PJP**

QUALITY CONTROL IN BLOOD BANKING Byron A Myhre MD PhD Pp 234 Chichester John Wiley & Sons Ltd £4 10

This book although written mainly for those concerned with the direction or operation of a major blood bank will also be of interest to those involved with immunology and genetics

The material is well and clearly presented covering every possible risk and danger involved in transfusion in simple language readily acceptable to the British reader which is not always the case in books written by Americans on their own specialist subject

It is essentially a practical text book and does not hesitate to draw attention to the effects of slip-shod procedures and to the lack of basic statistics to test long held beliefs and practices. For example, the ratios of cross matched to transfused blood used as an indication of an efficiency of ordering methods, is shown to be highest when the new house officer arrives and lowest after an intensive effort at education

The author stresses the need for simplicity to ensure quality control and his summary of the right approach being one of mild paranoia is typical of the very readable and memorable qualities in his book. His statement trust no one nohow nowhere may sound American but will have a familiar ring in many and together with the warning If anything can go wrong it will and will do it when least expected is of value in many areas as well as blood transfusion **A.O.C**

ANTIBIOTICS AND INFECTION Practical Diagnosis and Treatment in Infectious Disease. Edited by Ian M Smith Sam T Donta and Sergio Rabinovich Pp 413 Chichester John Wiley & Sons £13 50

It must be confessed at the start that this is a difficult book to read Perhaps transatlantic experience might desensitise one to the language Certainly more than this is required to obtain the roughness of pidgin discussions which appear to have been inserted verbatim. These can never replace the clear and expression of an expert's considered opinion on a subject but they can often completely conceal the gems and impair the teaching function of a text Editors must be ruthless even they cannot double as generous hosts

The 4th Annual Conference on Antibiotics and Infection sponsored by the Infectious Disease Division of the University of Iowa Department of Medicine covered a wide range of subjects and this report includes some thirty chapters

Amongst the various chapters what was attractive? Bear in mind that a reader generally only approves those views which agree with his own opinion so even this is suspect. The chapter on opportunistic infections is excellent and somewhat improved by its title The Compromised Host Too long have we concentrated upon the pathogen and neglected the patient. It was good to see that opiates paregoric and lomotil do more harm than good in diarrhoea and to read the emphatic statement that successful treatment of gonorrhoea requires high blood levels of penicillin The section on meningitis disappointed but again the emphasis placed on doing a blood culture at the same time as obtaining CSF redeemed some of the rest

With regret one cannot recommend this book for training purposes and it is difficult to extract helpful advice from it without spending a lot of time when coming to a clinical decision **PJP**

MEDICAL SUPPORT OF THE US ARMY IN VIETNAM 1965-1970. By Major General Spurgeon Neel Pp 196 Department of the Army Historical Unit Washington DC $3 35

The author who had so much to do with the success story of the United States medical services in Vietnam has produced in this volume a concise account of the organisation development and background of medical care in the Vietnam war Students of this period who seek guidance for the future should beware however that they are not carried away by the lessons learned in this war It is clear that the medical operation relied almost entirely on the availability and sole use of a large fleet of specially equipped helicopters which operated in an environment of total immunity from air attack. Armed forces medical services of countries other than the United States do not even visualise the use of specially dedicated helicopters for medical purposes But having said this a large number of references to specific advances and innovations will be found in the well laid out text, and many of these will repay following up in greater detail

Little reference will be found to naval medical operations however we are informed that specially designed Aid Boats accompanied naval assault craft and that these carried out shuttle services with casualties back to the naval operational bases

Readers will be impressed by the efficiency of the blood bank services bringing so much of their requirement from continental USA It is also interesting to note that after initial trouble with chloroquine resistant falciparum malaria the endemic tropical diseases to which troops were exposed caused remarkably little morbidity

This is an easily read book with an essential glossary of abbreviations Relief maps of the South East Asia area help to make the situation clear It is a book with which one must be familiar if one is involved in modern medical operational planning however wistful one may be about the large amount of straw that was available for the bricks **G A R G**

A SHORT TEXTBOOK OF VENEREOLOGY By R D Catterall Second edition Pp 214 London English Universities Press £2.24

It is unusual to be able to criticise the title of a book and at the same time to applaud its content. Perhaps the rate of change in the publishing world is less than in the world of planning. The period of time occupied between inception and execution reflects human factors and one wonders if we are going to be any better off when the next edition is entitled — A Short Textbook of Genito-Urinary Medicine.

This is a most valuable, practical and cheap textbook on the sexually transmitted diseases that can be strongly recommended to all doctors in higher or continuing training.

It reads easily and clearly. A major section on syphilis is filled neatly to consideration of the other treponemal diseases making a coherent whole. The tropical venereal disorders are clearly set out and the summary at the end of the chapter neatly emphasises the distinction between lymphogranuloma venereum and granuloma inguinale which often confuses the student.

An excellent teaching text well up to the high standard set by the preceding volumes of this series. **P.J.P.**

THE PHYSIOLOGY OF DISEASE. Roddie and Wallace. Pp 588. London: Lloyd-Luke. £6.50.

The preface explains that this book aims to assist the student to integrate the pre-clinical and clinical subjects. Parts are therefore necessarily very basic. This is not a disadvantage as each section is followed by a valuable and careful selection of further reading derived from recent leading articles in the *BMJ* and *Lancet*. This approach makes the book a valuable adjunct to postgraduate study as well as directing students into good habits of general reading.

In addition to sections on the usual physiological systems there are valuable chapters on the effect of age on disease patterns from gestation to geriatrics, the physiology of physical and emotional stress, disorders of immunity and a full section on disorders of the reproductive system from before conception to breast feeding.

Though this book will not replace the formal course in physiology, it is a valuable orientating text when the student comes to study disease and is therefore a most valuable revision text later in life. Similar books exist on the pathology of disease which in parallel with this account of the physiological deviations in the marked state make most valuable companion volumes to any standard textbook of medicine.

Inevitably in the first edition of a book with a new approach to a broad span there is some unevenness which one can anticipate will be ironed out in the course and it would be invidious to highlight these. Perhaps more important I found the index to be inadequate. This section is essential for the student who may have only a very vague map of the subject he is studying and deserves greater attention in the next edition.

It doesn't entirely satisfy but then few children do at birth. Should they do so they would be regarded as offensively precocious. Like all new borns one wishes for a happy development with not too many buffets on the way. Expectations for the future are high item is an essential ingredient in the evolution of anything produced by man.

P.J.P.

XVIII INTERNATIONAL CONGRESS ON OCCUPATIONAL HEALTH

The above Congress will be held in Brighton from September 14-19 1975.

Further information may be obtained from:

Conference Services Ltd
43 Charles St
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Telephone: 01-499 1101

SERVICE NEWS

PROMOTIONS

To Surgeon Rear Admiral and Medical Officer in Charge, Institute of Naval Medicine and Dean of Naval Medicine, on March 22, 1975

[illegible] F R [illegible] OBE QHP MRCP MRCS LRCP RAMC Surgeon Rear Admiral Rawlins was formerly Director of Health and Research Naval Consultant in Physiology in the rank of Commodore

To Surgeon Rear Admiral (Naval Hospitals) on June 30 1975

P D Gordon Fugh OBE MB BS FRCS Surgeon Rear Admiral Fugh was Medical Officer in Charge and Staff Medical Officer to Flag Officer Malta He is Honorary Surgeon

To Surgeon Rear Admiral (Ships and Establishments) on August 30, 1975

H Russell Mallows QHP MA MD FFOM DPH DIH Surgeon Captain Mallows is at present Staff Medical Officer and Naval Medical Officer of Health to CINCNAVHOME He is a Consultant Physician

To Surgeon Commodore (Deputy MDG(N) and as Director Medical Personnel and Logistics) on April 28 1975

John A B Harrison MRCS LRCP DMRD Surgeon Commodore Harrison was formerly Consultant Radiologist at the Royal Naval Hospital Haslar

To Surgeon Lieutenant Commander I R Haydon C S Bourne
To Surgeon Lieutenant P W Duff J E Anderson P C Runchman T R D Riley

APPOINTMENTS

As Medical Officer in Charge, Royal Naval Hospital Haslar on June 23, 1975
Surgeon Captain A P M Nicol MVO CBE MRCS, LRCP FIARCS FFARCS

As Medical Officer-in-Charge Royal Naval Hospital, Plymouth on August 29 1975
Surgeon Capt in P J Ilesley OBE FRCP DTM&H DCH

HONOURS

Queen's Honours List
Surgeon Rear Admiral J S P Rawlins OBE

Officer Brother of the Most Venerable Order of St John of Jerusalem
Surgeon Captain R J W Lambert

HIGHER QUALIFICATIONS AND AWARDS

Surgeon Vice Admiral Sir James Watt KBE QHS—FRCP
Surgeon Captain D O Haynes—FRCPath
Surgeon Commander J R Frilkton—FRCR
Surgeon Lieutenant Commander C N Warlow — MRCGP
Surgeon Lieutenant Commander P Addis DCH
Surgeon Lieutenant Commander M R O'Connell — DPM
Surgeon Lieutenant Commander M Mackod — MRCP
Surgeon Lieutenant N E Baldock — MRCP
Surgeon Lieutenant D H Reed — DLO
Surgeon Lieutenant R K G Hughes — DPM

Chadwick Medal and Prize
The 1975 Navy, Army and Air Force Medal and prize of £100 was awarded to Surgeon Rear Admiral J S P Rawlins OBE for his services to the promotion of health of the men of the Royal Navy

NEW ENTRIES

Surgeon Lieutenants Wendt D Rundell D A Grisham G I Newcombe R J Clark

RELEASED FROM SHORT SERVICE COMMISSION

Surgeon Lieutenant Commanders P R Vassell Adams D S Robins
Surgeon Lieutenants R C Quinnell R J Rhodes A D L Hopps R K G Hughes
Surgeon Lieutenants (D) J D Hargreaves A F Wood J E Moore

PLACED ON RETIRED LIST

Surgeon Rear Admiral A O'Connor MVO QHP
Surgeon Commander (D) R S Hall
Surgeon Lieutenant Commander P J M Urwin

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

New Entries

Nursing Sisters
Misses J C Brown C M Taylor A E Lenihlad H E J Kidston A E Dongfoss

Quarter Officer, Naval Nursing
Miss S L Hicks

Promotions

To Superintending Sister
Misses M J Mills M Hamill A C Haw...

MEDICAL SERVICE OFFICERS

Promotions

To Commander (on Qualification) [illegible] A A Jackson

[illegible] J A [illegible] served as Secretary to MDHC [illegible] of Naval Medicine from 1969 until [illegible] as Senior Admin Officer RNH Haslar from 1972 to October 1974. He is at present [illegible] for a Masters degree in Public and Social Administration (Health and Hospitals) at Bristol University.

To Lieutenant Commander D M C Pa...
To Lieutenant I M Gill L K Lloyd
To Sub Lieutenant D B Dougherty A Pigford

Retirement
Lieutenant R W Jewitt

Aigoillettes

On [illegible] Medical Service Officers are allowed to wear aiguillettes. The [illegible] Lieutenant-Commander A. C. Mackay Surgeon to the MOIC Institute of Naval Medicine.

Lieutenant-Commander A. C. Mackay was formerly Admin Officer in RN Hospital Haslar

ROYAL NAVAL RESERVE

Promotions

To Surgeon Lieutenant-Commander R. G. Wilson, A. J. A. Rew

To Surgeon Lieutenant-Commander (D) R. Hartley, C. J. T. Howell

Retirements

Surgeon Lieutenant-Commanders A. E. E. Kead, B. Cornennon, B. W. Petty, C. V. Kania

Surgeon Lieutenant-Commander (D) M. C. Kosen

OBITUARY

Surgeon Lieutenant-Commander Dennis SHUTE MB ChB DTM RN died on April 22, 1975 at the age of 64 years.

Dennis Shute entered the Royal Naval Medical Service as a Surgeon Lieutenant in September 1935. He was promoted to Lieutenant-Commander on September 23 1941 and was invalided from the Service on July 5 1946.

W. S. Parker writes:

Dr Dennis Shute, Director of the Calgary Pathology Laboratories of the University of Alberta, died at Brisbane, Australia after a brief illness.

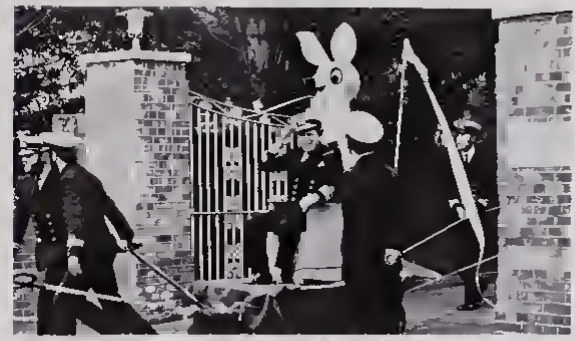
Dennis Shute was born on January 2 1911. He graduated from Manchester University in 1935. With his quiet affability and a certain air of cynical realism he was a noteworthy member of his student year. He was a keen cross-country runner and he joined the RNVR as a surgeon sub-lieutenant as soon as he was eligible.

His intention to enter the Royal Navy was accelerated by one of Mussolini's war scares and he at one [illegible] himself at sea in a make-shift anti-aircraft [illegible] whose last gun was retrieved from the Imperial War Museum. At the outbreak of World War II Dennis was medical officer to a destroyer flotilla in the China Sea. On his return home, he was appointed to RN Hospital Saleeth, Liverpool. During the period he took the Diploma in Tropical Medicine at Liverpool University. He then served as clinical pathologist at St. Peter's RN Hospital Colombo. Demobilised as Surgeon Lieutenant-Commander, RN, he returned to a post in the Central Pathology Laboratory, Liverpool, gaining his Manchester MD the same year.

In 1948 Dennis emigrated to Canada to become Director of the Calgary Laboratories of the University of Alberta which he was to make his life's work. He held the post for 27 years until his death. His was the last generation of general pathologists often addressed by necessity when working single-handed with minimal facilities in remote parts of the world.

He is survived by his wife Elisabeth, formerly a Nursing Sister in the Colonial Medical Service, and by their two daughters.

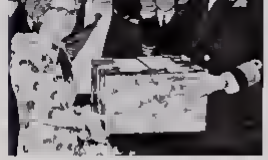
On his way 'down-under'



[illegible] MOIC

When Surgeon Rear Admiral T H O'Connor left the Institute of Naval Medicine on March 21 1975 as it was thought to his new post in Australia on March 24 he was bowed by his officers and chauffeured on his way by his staff. The same evening a Farewell Dinner was held for Admiral and Mrs O'Connor in the Wardroom of HMS *Daedalus* where Surgeon Captain I H Colley on behalf of his colleagues and staff [illegible] outlining Admiral O'Connor's [illegible] made a presentation of several [illegible] His reply. Admiral O'Connor thanked Surgeon Captain Colley and expressed his appreciation of the gifts which he said would [illegible] to remind him of Mrs O'Connor of the years happy period spent with the Institute and of the loyalty and support given to him throughout his appointment as MOIC.

Presentation to Mr Charles Milne, MBE



Mr and Mrs Milne receive a cheque from Surgeon Rear Admiral [illegible] CB CBE QHS

Mr Charles Milne MBE retired on April 4 1975 after 58 years service to the Crown including 24 years of employment in the RN Dental Service.

To mark the occasion Charles and his wife Gwen were presented with a Teas made by the Medical Officer in Charge RN Hospital Haslar and a cheque from their many friends and colleagues.

Mr Milne saw service as a Royal Marine in all parts of the world and both World Wars including Murmansk and Archangel waters during the Russian Revolution.

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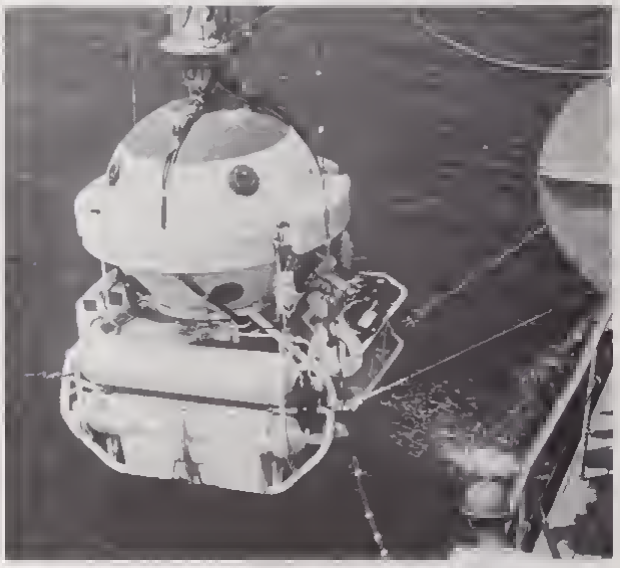
(The Ministry of Defence (Naval) does not hold itself responsible for the opinions expressed in this Journal)



Editorial

Underwater Medicine is one of the most rapidly expanding areas of the new frontiers of medicine. It is pleasing to report that the Royal Naval Medical Service is vitally involved in this field.

Following the initial demonstration by the United States Navy and the French that the concept of maintaining and supporting men in hyperbaric conditions was both feasible and practical, the development of saturation diving has proceeded apace.

The Royal Naval saturation diving techniques were developed in the Royal Naval Deep Trials Unit and the Royal Naval Physiological Laboratory in the years following a record series of deep diving trials conducted by HMS *Reclaim* in 1965. This work progressed despite an intervening loss of interest in deep diving to the point that saturation diving to 300 metres with a seven day stay at pressures up to 250 metres became an entirely practical procedure in experimental conditions. Much of the development involved was the result of work by Surgeon Commander E. E. P. Barnard RN and Commander J. Vorosmarti MC USN who was an Exchange Officer for the later part of the trials. Throughout the closest contact was possible with the United States Navy and when operational evaluation became necessary it was of inestimable value that the USN Mark 1 Deep Diving System was made available.

From May to September 1975 a team of Royal Naval Divers and Medical Officers was based in Panama City, Florida to carry out sea trials with Royal Naval saturation tables. These trials resulted in an entirely successful series of dives to a maximum depth of 300 metres thus proving that when a ship-borne saturation diving system is provided for the Royal Navy the biomedical techniques and disciplines required are immediately available.

It is worthy of note that the generosity of the United States Navy which made these trials possible was a shining example of the cooperation and collaboration of recent years. This was further emphasised by the fact that all the dives carried out from Panama City involved a mixed team of RN and USN divers. The Medical Exchange Officers programme, the Memorandum of Understanding on deep diving, the Information Exchange Programme on submarine medicine and on the dynamic response to impact and the steady interchange of medical and scientific personnel across the Atlantic testify to the vitality of a collaboration in biomedical research over a wide range of disciplines which is manifestly to our mutual advantage.

Much valuable information and experience has resulted from these trials and it is hoped that the opportunity to demonstrate the operational role of saturation diving using a Royal Naval ship borne system will not be too long delayed.

Human and Experimental Factors in Protracted Isolation Studies

D M Davies

ABSTRACT

During the past two years in a series of [illegible] the effects of abnormal atmospheres [illegible] volunteer Naval subjects have been physically isolated from the outside world in a large exposure chamber continuously for periods of up to 81 days. The planning and execution of these studies revealed questions [illegible] which could neither be deduced from [illegible] nor formulated beforehand. Some of the human and experimental problems involved are examined and the ways in which they were tackled are discussed together with an assessment of the main lessons learnt during these relatively unique studies.

Introduction

Four long investigations into the effects on man of continuous exposure to abnormal atmospheric conditions have now been completed in the human exposure chamber of the Environmental Medicine Unit (EMU) at the Institute of Naval Medicine. These studies involved physically isolating volunteer Naval Rating subjects inside the chamber continuously for protracted periods of time while exposing them to different levels of carbon dioxide (CO_2) or carbon monoxide (CO). The experimental parameters of these four investigations are summarised in Table 1 and brief descriptions of the EMU itself (Elgie 1974) and the *raison d'etre* for the studies (Davies 1974) have been given elsewhere. Much was learnt about the problems of such long term human isolation studies during their preparation and execution and many of the lessons learnt will be applicable not only in similar investigations but also in non research situations. It was thought valuable therefore to put on record the main problems that came to light and the ways in which they were tackled.

The first and perhaps the most important lesson learnt was that serious studies on men in unusual environments or with new experimental conditions or procedures or of long duration should never be embarked upon without conducting and assessing the results of properly planned comprehensive pilot studies beforehand. Major changes in the programmes for both the long 0.5% CO_2 study and the 50 ppm CO study were instituted as a result of observations made during their respective pilot studies at 1.5% CO_2 and 75 ppm CO. Entirely due to these changes the long CO_2 study was brought to a successful conclusion and the pattern for the series of CO studies currently being undertaken was set. All eventualities can never be foreseen during the planning of a pilot study but it should be possible in the study itself to reveal the major problem areas. In the discussion of the various factors that follows most remarks are

Table 1
Experimental Parameters for EMU Studies

	Study 1	Study 2	Study 3	Study 4
Number of subjects	4	9	9	9
Atmosphere condition	1.5% CO_2	0.5% CO_2	75 ppm CO	50 ppm CO
Control period (days)	7	28	15	6
Exposure period (days)	12	35	7	8
Recovery period (days)	7	18	8	6
Total duration of isolation (days)	26	81	30	20

addressed to the longest and most comprehensive study the 8t day investigation into the effects of 0 5% CO_2 but where relevant comment is made on other specific studies

Experimental Constraints

The first things looked at were the invariable factors in each study These were considered to be the primary and secondary objectives of the investigations and following from these the tests to be conducted during them In multifactorial studies it was found to be vitally necessary to set all objectives in terms of priority level so that when problems arose in any one area the methods used to tackle them could be balanced against the real need to deal with them totally or only partly relative to other aspects of the experiments For the carbon dioxide studies the objective priorities set are listed in Table 2 From such a list the tests to be used to meet each objective could be defined and the daily and weekly experimental programmes planned accordingly Then when problems arose with testing such as equipment failure it was ensured that the work emphasis was placed where it really mattered — on carrying out the highest priority tests at the planned times

Table 2
Experimental Objectives Priority List for 0 5% CO_2 Study

1 Acid base status Blood and urine
2 Mineral balance Blood urine faeces and food
3 Respiratory physiology
4 Biochemical and haematological status
5 Mental and physical performance
6 Sleep patterns
7 Psychological reactions to environment

Other factors constraining the experimental programmes were in general variable and subject to some degree to the programme designer s choice but they still needed to be fixed as far as possible before the studies commenced The statistical design for instance would appear to be necessarily a fixed constraint but experience soon showed that a flexible approach had to be taken so that the objectives could still be adequately met if unexpected circumstances arose such as subjects leaving the experiment or falling ill or test equipment becoming defective Four main variables are considered here

The first was the number of subjects This depended on two things the maximum 12 man capacity of the experimental facilities and the minimum acceptable number commensurate with achieving the objectives of the studies as enough subjects of the right type to use maximum capacity might not have been available This again is where the priority list of objectives was used In the long CO_2 study eight was the minimum acceptable number for the four top priority objectives and ten suitable subjects volunteered one was rejected early in the experiment leaving nine It so happened that this fitted the performance and sleep studies well as eight or twelve were equally acceptable numbers and thus all objectives could be met satisfactorily with nine

The next variable was the type of subject related primarily as far as the long CO_2 study was concerned to the required medical standards and to the previous experience of the subjects in environments similar to that of the study Two problem areas were found concerned with the latter constraint if some subjects had been accustomed to say the performance tests in this type of study they might have caused a considerable skew in the results of the group as a whole if they had experienced related physical situations such as chamber conditions as in divers or raised CO_2 as in submariners physiological reactions to the environment might be altered This was particularly important in the CO_2 studies as such effects had already been seen in field investigations in nuclear submarines (Gray Morris and Brooks 1973)

[illegible] the definition of the duration of [illegible] necessarily and conflict between [illegible] arise here particularly as the [illegible] were necessarily applied as opposed to pure research. Scientifically the objectives of the long CO_2 study could [illegible] been met within 50 days but potential customer objections had to be borne in mind and the subjects had to be exposed to CO_2 for somewhere near the full time men might be exposed on [illegible] patrols to make the results [illegible] public to the customer adding [illegible] ically acceptable control periods at [illegible] and lengthened the experiment [illegible] bility. EMU experience from the [illegible] endurance point of view was that the [illegible] length of isolation was not critical. [illegible] the approximate end points of the [illegible] ment known to the subjects they [illegible] to equilibrate at a lower plane of [illegible] and physical activity in the middle of [illegible] studies and three weeks isolation [illegible] d is much of a psychological [illegible] to them as three months. It was [illegible] from US Navy studies on the USS [illegible] around the world cruise. However [illegible] some human characteristics change after [illegible] 10 weeks of communal isolation [illegible] least under nuclear submarine [illegible] conditions and passive anti reactions to isolation change to reduce after about this time (Weybrew 1971). When subjects knew the exact day of release from the chamber beforehand it was found that performance data collected towards the end of recovery periods was invariably adversely affected. In the second CO study the subjects were not informed when they were to be released until after the final tests on the last day of the study. Discussions with these subjects and with those from previous studies revealed that emotional pressures built up [illegible] in the days prior to a known date of release and it was agreed by both subjects and experimenters that it was far preferable for the former not to know the date of release beforehand.

The fourth variable was the payment of the maximum available rewards in the most motivating way while still being fair to subjects who might have had to leave the studies through no fault of their own. In all the studies under discussion the subjects received free food and accommodation which appealed to at least the bachelors and an average sum (taxable) of about £2.20 per day in the chamber the actual amount being dependent on the number of medical tests to which they were subjected. Financial reward was an important motivating factor and it was and still is considered that a reward of available sufficient to double the subjects normal rate of pay would achieve a satisfactory motivational balance. The total amount available was administered on a sliding scale the daily reward increasing with duration of time in the chamber. This system was instituted in an effort to preempt wholly financially motivated subjects who might have endeavoured to leave the experiment prematurely having earned a certain sum based on a fixed daily rate which they had set as their goal beforehand. In practice no subjects failed to remain in the chamber for the whole of the prescribed time.

Obtaining and selecting volunteers

The system used for obtaining volunteers was advertisement through standard Naval channels quoting the generalities of the experiment only to serve interested candidates and then informal interviews when details of the study and possible rewards were explained and candidates were shown the chamber itself. This was followed by sending volunteers away to consider the hardships and rewards themselves and bringing them back for formal interviews if they were still interested. Finally an ethics board was held

for several volunteers where they were interviewed collectively and individually by a senior naval officer not connected with the experiment to ensure that the subjects were given all the relevant facts and that they fully appreciated what they were about to undergo.

Main interview questions centred on motivation for volunteering, reaction to experience of hardship, and other [illegible] designed to elicit character details. Some interesting facts came to light. Motivation was rarely [illegible] primarily financial experience [illegible] if it was, the volunteer was [illegible] a good subject. Main motivating factors were the desire to do something completely different and unusual, a genuine desire to assist in medical research and in the long CO_2 study a pioneering or record-breaking spirit. These seemed very [illegible] motivations and it was concluded that they more would be present in all good subjects. As far as could be ascertained there were no [illegible] masochistically motivated volunteers, but of which traits were looked for at interview.

It was considered important to weed out during the study itself as well as during interviews, as the real test of an individual could only take place under actual test conditions; once doubts were felt about a given subject he would have been removed forthwith before his demotivation affected the others. The importance of cultivating potential leaders amongst the subjects was apparent in all studies. A very great burden was placed on the senior volunteer in the long CO_2 study by virtue of his being the Senior Rate in the naval discipline system and both he and EMU staff were helped by being able to use the natural leaders to prevent inter-subject personality problems becoming [illegible] over! An important lesson learnt here was to ensure that in future the senior subject in the chamber is only one professional or rank level above the rest of

[illegible]

Trial blindness

From the scientific [illegible] [illegible]

[illegible]

of the st[illegible] expe[illegible] rand[illegible] [illegible] all [illegible] [illegible] CO studies.

Subject [illegible]

This [illegible] factor [illegible] successful [illegible] interference [illegible] great [illegible]

would react adversely and subjects would indicate their abreaction by refusing to participate in the offending test expressing annoyance in any of a number of ways deliberate malperformance or malcooperation in tests or simply by walking out If the tests demanded too little or lacked stimuli or interest motivation would fall away and boredom and apathy would set in the end result being the same Thus pitching of the tests at the right subject reaction level and a carefully assessed and balanced test programme were all important One most valuable lesson learnt was to make the low priority tests the most unacceptable to the subjects and then the important ones succeeded An example of this was the mental performance test battery performed four times every day This produced most abreaction and the really important arterial and capillary blood sampling procedures though painful were relatively much more acceptable If the abreaction had become too high to be acceptable the subjects' gratitude could have been earned and therefore morale and motivation boosted by shortening or reducing the frequency of the tests concerned

Domestic problems

A large number of problems became apparent in the chamber living situation in both CO_2 studies The two most important were food and contact with friends and families outside Taking food first in the CO_2 pilot study the subjects cooked their own food to pre planned but self selected menus This was a failure because of different standards of cooking general dislike of food preparation and inability of non-professionals to make food attractive Failure became apparent on examination of food intake records which showed a decrease in food intake and increasing imbalance of diet consumed as the study progressed to the consequent detriment of metabolic balance studies In the long CO_2 study it was decided to attach two professional cooks to prepare all meals to the pre-planned diet and this was much more successful However even here a pattern in food intake could be seen related to which cook was actually on duty at the time and in metabolic studies considerable scientific inaccuracies could be induced in this way In the first CO study cooks were again used and although balance studies were not carried out it was felt that "good" food days and "bad" food days might influence psychometric test results Thus in the second CO run pre-pared meals were obtained from outside INM and this system was the best of all it is to be used in all future long term studies

Initially it was decided that although newspapers and TV would be permitted to the subjects receipt of incoming personal mail would not be allowed nor would telephone calls Apart from any untoward effects on tests that the receipt of good or particularly bad news might have a major reason for this was to prevent one easy method by which a subject might secure his release from the chamber by asking someone outside to inform the EMU of for example family death or misfortune The sending out of personal mail by the subjects was allowed It was discovered in the long CO_2 study that written messages if not mail were actually finding their way into the chamber and a number of most ingenious methods by which this was being achieved were discovered However this "beat the system" challenge was found to be most helpful from a subject morale point of view and research staff entered into the game with the subjects Nevertheless it was eventually realised that except in an experiment involving total isolation it was very difficult and probably not really necessary to stop the transport of such messages entirely and it was decided for studies longer than three weeks to permit mail delivery on those days on which no

major experimental procedures were planned A report was published shortly after this in which American workers described some long term environmental chamber studies and they had obviously come to the same conclusion These investigators permitted as an aid to morale one 15 minute mainland telephone call anywhere in the USA per week and a mail delivery every day (Storm and Giannetta 1974)

There were three major and a few minor personality clashes during the studies all of which were sorted out by judicious counselling by EMU staff and reiteration to the subjects of the importance of avoiding potentially dangerous situations It was soon realised that developing problems must be discovered early by vigilant observation on the part of watchkeepers and experimenters and counteracted at an early stage Good subject leaders were very valuable in this respect keeping EMU staff informed if they thought matters were getting beyond their control

Publicity in the CO_2 studies was enjoyed by the subjects but not by the investigators and as a good morale booster was encouraged in small doses Visits by observers were disrupting to the subjects especially if permitted access to the chamber but it was learnt that observation was not objected to provided it was discreet Accordingly one way mirrors were fitted to observation windows in time for the CO studies and this was found to be perfectly acceptable to both subjects and experimenters

It was found quite possible to underestimate the subjects capacity to get bored Most soon got tired with the tasks they had set themselves for their sojourn in the chamber except for one or two who were taking examinations after release from the study A naval educational examination was actually undertaken in the chamber by four subjects in the first CO run It became necessary to maintain an ever-changing and surprisingly wide based library and to provide a large and varied collection of physical and mental games and facilities for any new hobbies or pastimes that became of interest to the subjects during their time in the chamber The range of activities was wide varying from knitting to a study of forensic pathology

Physical lethargy quickly developed in all studies and sustained efforts had to be applied to keep a satisfactory mean level of physical activity for example by exercise machines and constant encouragement

Conclusions

The main lessons learnt during the studies are summarised in Table 3 In the final analysis the success or failure of the studies depended almost entirely on adequate maintenance of initial motivation and morale It became apparent that the most important stimulus to this end was the process of EMU staff constantly reminding both the subjects and themselves of the importance of meeting the objectives of the studies Whenever a drop in subject moral became apparent a timely boost such as telling the subjects how they were breaking new ground making major contributions to medical science aiding in securing the

Table 3
Main Lessons Learnt in EMU Studies

1 Make pilot studies mandatory
2 Set priorities on experimental objectives
3 Design low priority procedures to be most demotivating
4 Use as suitable rewards to maintain endurance
5 Stimulate natural leaders participation subject
6 Be prepared to drop tasks producing excessive abreaction
7 Place highest domestic priority on satisfactory feeding
8 Do not inform subjects of actual date of release from studies
9 Inform subjects in detail of experimental objectives and procedures and use them as collaborators where possible
10 Establish and maintain equal balance with each individual in subject/staff relationships

health of their serving colleagues and contributing to the performance of the Navy as a whole worked wonders even if slightly amplified for this purpose. Another significant factor revealed was the Subject Investigator relationship and it proved important to instil a sense of collaboration in the subjects by discussing with them the experimental objectives by allowing them to assist as often as possible in experimental procedures and by allocating to them some relatively simple tasks such as sorting out samples or preparing data for subsequent analysis. Any person this clash between staff and subjects could not be permitted; the investigator had to bow to the subject in such cases as he was the only one who really stood to lose anything. All staff had to take and show a personal interest in all subjects and this had to be, and be seen to be, equally balanced between the latter no matter how difficult to achieve on the part of the investigator.

Acknowledgement

I am grateful for the permission of the Medical Director General (Naval) to submit this article for publication.

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PUBLICATION BY RN MEDICAL OFFICERS — ABSTRACTS

DAVIES D M (1975) The application of the [illegible] limits of [illegible] under conditions of continuous exposure. *Annals of Occupational Hygiene* 18: 21-28.

In a totally closed environment such as that of the nuclear submarine exposure to raised ambient levels [illegible] carbon monoxide [illegible]. The principles on which the maximum permissible concentration (MPC) [illegible] exposure should be based are explored with particular reference to [illegible] smokers and [illegible] effect on individual and [illegible] system [illegible] Reference to ambient [illegible] levels in submarines. Induced [illegible] smoking and [illegible] the financial material [illegible] MPC and to [illegible] regarding toxic levels leads to an [illegible] MPC based primarily on [illegible] smokers.

[illegible] made that the current [illegible] MPC of 25 ppm [illegible] should be [illegible] to 15 ppm bringing it into line with [illegible] and [illegible] an MPC [illegible] applicable in any closed environment.

HALLENBECK J M, BOVE A A, ELLIOTT D H (1975) Mechanisms underlying spinal cord damage in decompression sickness. *Neurology* 25: 308-316.

Decompression sickness which damaged the spinal cord was produced in anaesthetised dogs using a compression chamber. Cerebrospinal fluid pressure and several intravascular and intracardiac pressures were monitored [illegible] of simulated dives. Manometric responses to [illegible] and abdominal compression were measured both predive and postdive. After signs of spinal cord damage were evident [illegible] of the epidural vertebral venous system were [illegible] both predive and postdive. [illegible] of the brains and cords of [illegible] were carried out. The results indicate that the epidural vertebral venous system becomes obstructed during spinal cord damaging decompression sickness and strongly suggest that spinal cord infarction in decompression sickness is caused by obstruction of venous drainage at the level of the epidural vertebral venous system.

The Anterior Maxillary Osteotomy

T J C Hall

ABSTRACT

[illegible]

Introduction

Basic facial morphology is genetically determined. The component parts of the facial skeleton are variable in their relationship to each other and to the cranial base. Soft tissue characteristics and endogenous muscle patterns are also determined by inherited factors. Certain structures such as alveolar bone and the temporomandibular joint are adaptive in nature so enabling the formation of a viable masticatory system from the predetermined base tissues. Additional adaptive muscle patterns may exist to enable basic physiological requirements to be fulfilled (Ballard 1967). Several inherited factors determine dental occlusion. Amongst these are the relationship of the basal bone of the upper and lower jaws, the form of the soft tissue environment into which the teeth develop and the existence or otherwise of dental crowding.

Considerable variations of facial profile and dental occlusion may therefore arise within a population of mixed genetic background. When there is a variation of tooth position or relationship from the normal a malocclusion is said to be present (Walther 1967). Many malocclusions do not require correction. However if a malocclusion is or is likely to become detrimental to the physical or emotional well being of the [illegible] be instituted. Th[illegible] place the teeth [illegible] functionally [illegible] acceptable and st[illegible] the soft tissues.

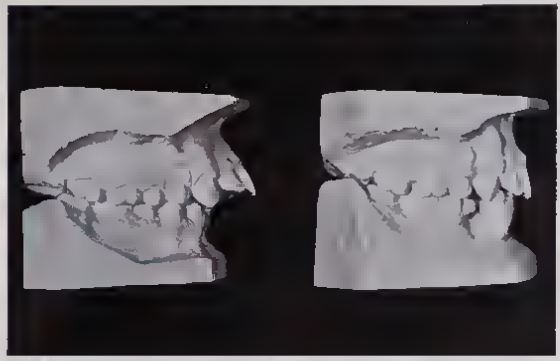
Conventional orth[illegible] use appliances to move teeth within the alveolar bone. The great majority of treatments are undertaken in childhood by these standard techniques. However surgical measures are required if a change of basal bone relationship is indicated or a more rapid treatment is desired.

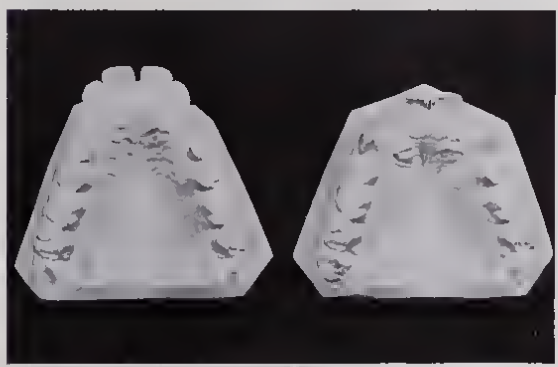
This paper describes the anterior maxillary osteotomy (Wassmund 1935) used for correction of a maxillary protrusion. It is essential that a diagnosis of the malocclusion be made before treatment is planned. An incisor overjet may be due to a protrusion of the maxilla, a retrusion of the mandible, a combination of both or merely a proclination of the maxillary teeth themselves. Different aetiologies require different treatment plans to obtain a functionally satisfactory pleasing result.

Surgical Procedure

The anterior part of the maxilla is separated from the facial skeleton. Bilateral buccal cuts are made vertically in the premolar region. They are continued forward above the canine teeth through the lateral wall of the nose up to the piriform aperture. These cuts are connected by the removal of bone across the palate between the premolar regions (fig 1). If posterior

[illegible] segment is identified and separated either utilise an existing gap or remove a premolar tooth on each side. The resultant block carrying the incisor and canine teeth is then detached from the nasal septum. When posterior movement of the [illegible] teeth is required it is found that an increase in the [illegible] width is needed (fig. 2 and 3) and a midline split of the anterior maxilla is undertaken. This manoeuvre allows increased flexibility in planning the teeth positions





The intended occlusion and the width of bone that must be removed are planned on plaster models before operation. Several millimetres of bone may need to be removed buccally and across the palate. Unless it is desired to either close a diastema or move the fragments upwards the midline split and the detachment from the nasal septum are simple divisions made with an osteotome or chisel. The buccal cuts are approached by incisions placed vertically just posterior to the intended bone cut and continued only up to the reflection of the oral mucosa. The cut to the piriform aperture is made from a subperiosteal tunnel. The palatal bone is removed from an approach tunnelled above the palatal mucoperiosteum. The nasal mucosa remains intact. The midline split and the division from the nasal septum are carried out through a vertical incision high in the sulcus labial to the central incisors. The fragments are supported in their new positions by methods of fixation to the teeth. Preplanned sectional cap splints, arch bars or orthodontic bands may be used. Bony union occurs in about six weeks and intermaxillary fixation is not required. The excess palatal tissue remodels satisfactorily.

Discussion

Individuals may reach adulthood with untreated oral occlusions for many reasons. The maxillary protusion malocclusion under discussion may be detrimental to the patient in several ways. An increase in overjet may permit the over development of the lower labial segment and sometimes trauma follows to the palatal gingivae of the upper teeth. The maintenance of the gingival health of teeth lying outside incompetent lips may be difficult (Litle Driscoll & Burman 1955). Prominent

Fig. 1. Pre-operative appearance. Fig. 2. Post-operative appearance.

Fig. 3 A and B. Typical [illegible] anterior maxillary osteotomy. In this case a [illegible] vertical displacement of the [illegible] extra time

proclined incisor teeth are more at risk of accidental trauma (McEwen McHugh & Hitchen 1967) Patients may seek correction of a disfiguring malocclusion for aesthetic reasons and experience suggests their self confidence greatly increases after treatment (fig 4 A&B and 5 A&B)

The treatment possibilities that may be offered to adult patients with incisor protrusions are firstly conventional orthodontic appliance therapy secondly devitalisation of the teeth and post crowns thirdly extractions and the fitting of a prosthesis and fourthly surgery as outlined Orthodontic treatments generally take between eighteen months and two years to complete during which time appliances are worn and the patient must be available for their adjustment at monthly intervals This is frequently not practical nor acceptable to adult or Service patients Correction by crowning or by the provision of a prosthesis must always be potentially harmful to the remaining dentition In carefully selected cases surgery is the treatment of choice for the older patient In practice time is taken a week and although fixation is worn for six weeks it is usual for patients to return to light work for half this period

The position of the upper labial segment must be carefully planned If full reduction of the overjet is sought the maxillary incisors should be placed so that they are under the control of the inner surface of the lower lip (Orton 1966) The interincisal angle should be adjusted to within the normal range To achieve these criteria it may be necessary in cases of complete overbite to lower the mandibular incisor and canine teeth either by preoperative orthodontic treatment or surgery at the time of the maxillary procedure

It will be appreciated that the position of the mucoperiosteal incisions is critical to the maintenance of the blood supply to the

fragments Bell (1969) and Bell and Levy (1970) have examined this essential aspect of the procedure The main supply is from the labial and nasal mucosa flaps Wunderer (1962) has described a transverse palatal incision allowing cutting of this bone under open vision so demonstrating that preservation of the palatal flap is not essential Hovell (1970) cautions against this approach Steinhanser (1972) uses this modification but recommends that the labial flap is not violated by the incision for the midline split which is made instead from the palatal side Attention must be paid at operation to avoid damage to the roots of the teeth or their individual blood supply Johnson and Hinds (1969) state that unless direct injury is done to the teeth the vascular supply will be re established Bell (1969) recommends that cuts should not be less than five millimetres from the apex of a tooth Reinnervation of the pulp usually occurs but is not essential for tooth vitality Regular post operative observation of any teeth that have been at risk is prudent Westwood and Tilson (1975) have reported a series of unfortunate sequelae that followed faulty surgical technique

Acknowledgements

I wish to thank Mr F G Haselden Consultant Oral Surgeon Odstock Hospital Salisbury Wilts for introducing me to the technicalities of the surgery I also wish to thank Mr K H Clark for laboratory assistance and Mr E Over for the photographs Finally I am grateful for the permission of the Medical Director General (N) to submit this article for publication

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Composite Odontome: Case Report

G. D. Sharpe

ABSTRACT

A case ... presented ... [illegible]

Introduction

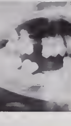
Malformations of the dental hard tissues are well documented in the oral pathological literature and can range from a simple extra cusp on an otherwise normal tooth to a completely bizarre jumble of enamel dentine and cementum without any recognisable tooth form. Within the latter category are the composite odontomes which have been divided into compound and complex varieties. The former are in fact composed of an aggregate of separate small denticles each one of which resembles a minute supernumerary tooth with the hard tissue elements in more or less normal morphological apposition. On the other hand the complex composite odontome presents the single mass of confused hard tissue. Radiologically it can be difficult to distinguish the two, as a superimposed mass of denticles can look just the same as a single hard tissue mass.

Although they are well described in the literature composite odontomes are still relative rarities and the one presented is the first one treated personally in over eighteen years of practice.

Case Report

A twenty year-old rating was referred for an opinion as both the lower right premolar teeth had failed to erupt. Inspection and palpation revealed a hard lump in the lower right buccal sulcus which was at first thought to be the crown of one of the unerupted teeth.

However the orthopantomogram revealed the premolars well embedded in the jaw bone with a hard tissue mass above and in front apparently impeding their eruption. A provisional diagnosis of composite odontome was made. The radiograph also revealed large apical areas related to both upper and lower incisors but these were considered to be purely coincidental findings arising from pulp death due to poorly lined synthetic restorations in these teeth rather than to any association with the hard tissue lesion (Fig 1).



The position of the premolars made it most unlikely that they would erupt after removal of the lesion preventing their eruption so arrangements were made to deal with the apical areas odontomes and the unerupted teeth at one operation under general anaesthesia

At operation the hard tissue mass proved to be a composite odontome but was composed of some larger confused masses of tissue plus a few smaller recognisable denticles making it a mixture of compound and complex types (Fig 2)

Fig 2

Discussion

The composite odontome obviously arises from some interference with normal development of the tooth germ but the exact mechanism is unknown Presumably this interference must be with the spatial arrangement of the various developing layers rather than with actual cellular function as all the separate hard tissues enamel dentine and cementum are formed and progress to relatively normal maturity

Acknowledgement

I am grateful for the permission of the Medical Director General (Naval) to submit this article for publication

PUBLICATION BY RN DENTAL OFFICER — ABSTRACT

DULY P R J 1975 The Dental Officer's Role in a Disaster Situation *International Review of the Army Navy Air Force Medical Services* 48 No 5 371–373

An account in French of a lecture given at the FDI meetings in Lille during September 1974 The author describes the pathology of disasters and proposes ways in which the Service Dental Officer can participate Here it is clear that the Dental Officer has a very positive role in any disaster — provided that he is well trained that he works as part of a team and that he is able to keep in practice with the areas of responsibility that are unlikely to arise in his normal day to day duties

The Precision Retained Full Denture

Richard T Walker

ABSTRACT

[illegible] advantages [illegible] precision [illegible] full [illegible]

Introduction

The indications for the use of precision retainers in partial denture and crown and bridge work are limited Their classification and description of detailed technical requirements may be found in text book form (Preiskel 1973) In suitable partially edentulous cases precision retainers are a valuable aid One such case is the precision retained full denture

Where only one or two teeth remain in the presence of a conventional partial denture a situation arises where with or without clasping considerable masticatory stress is transmitted to their supporting tissues which in the presence of dental plaque predisposes to rapid gingival recession exposure of root dentine and formation of stagnation areas In these cases denture sensitivity extensive cervical caries and chronic periodontal disease usually combine to effect early loss of such teeth (Grieve 1974)

The precision retained full denture has been referred to as a hybrid denture (Brill 1955) because it cannot be strictly described as either a full or partial denture The teeth concerned with these dentures are electively devitalised and root filled The crowns of such teeth are removed and the remaining root prepared so that the patrix portion of the precision retainer [illegible] post retained coping The [illegible] of the retainer is incorporated [illegible] the acrylic of the denture so that very positive retention is obtained

Removal of the crown portion of such teeth is thought to reduce the leverage on the root and therefore lessens the forces being transmitted to the periodontal tissues In fact it has been noticed that even where comparatively mobile teeth have been used there is a tendency for the root portion to tighten up following crown removal and fitting of the denture

Case Report

The patient a forty two year old male pipe smoker reported complaining that a recently relined tissue borne partial upper denture was unstable and lacked retention

Examination revealed this to be the case The patient had two upper canines present which were slightly mobile Radiographic examination of these teeth confirmed the suspicion that there was horizontal bone loss The prognosis of these teeth at this stage was poor

Elective devitalisation was performed and apical sectional silver points were cemented in place using Rosens sealer (Fig 1) This operation was performed in one visit The crowns of both canines were removed to gingival crest level and the canals prepared using an engineer s twist drill of 1 55 mm diameter The coronal 2mm of the prepared root canal was extended to provide an oval anti rotational cavity of similar form to that

described in the Wiptam post crown technique (Harty & Leggett 1972)

Four lengths of 1 5mm diameter Wiptam wire were cut so that two polysulphide rubber base impressions in closely adapted trays were taken with the wires in place One utilised a two and one retraction procedure (Roberts 1973) and the other was taken without any retraction Where the retraction procedure had been adopted a hard stone cast was constructed with two removable dies whilst the other was poured as a complete master cast This was surveyed and gross undercuts were plastered out Temporary Wiptam post crowns were cemented in place at this stage

Two precision retainers of the eccentric [illegible] were made in stainless steel using a watchmaker's lathe

The first attempt to manufacture the matrices from a pre constructed bar of stainless steel (EN12) with stainless steel wire loops electrically welded to the bar failed because of lack of strength at the point of weld It was decided that the matrices should be made complete from a sheet of stainless steel (EN58B — 20G) This involved drilling holes at intervals along the edge of the sheet to the pre determined size of the matrices The holes were then countersunk on both sides of the sheet and finished with a round needle file The loops of each matrix were fashioned externally by hand sawing and filing When

completed the loops [illegible] an eclipse saw in order [illegible] springiness required. The loops were trimmed and polished. The [illegible] fashioned in a similar manner and [illegible] filed whilst the loops were held in a toolmaker's clamp. The whole process of making a pair of retainers took approximately three hours and could not have been achieved without the very valuable assistance of members of the instructional staff in the workshops at the Royal Naval College of Engineering.

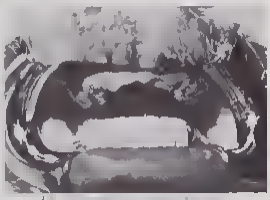
Each patrix possessed a centre hole and a matching surveyor tool was constructed to facilitate their accurate location during the wax up procedure.

The individual dies were used for the waxing up of each post and coping. The wax up was transferred to the master cast which was mounted on a model surveyor for location of each patrix. These were in turn waxed onto copings so that they were parallel.

The post/coping complex was cast onto the patrix in hard gold retention being offered by gold which had flowed through the centre hole of the patrix during the casting procedure. Each post retained patrix was checked for accuracy of fit at the jaw registration stage.

At the registration the retruded axis position of the mandible was recorded without the post retained patrices in place. The record was mounted on an average value articulator and the post retained patrices were returned to the master cast and plastered into position. The set up and try in stages were performed in the normal full denture manner. The master cast was flasked and the denture processed and finished.

At the final visit each post retained patrix and coping was cemented in place (Fig. 2) and each matrix was located on the patrix and held in place with sticky wax. The matrix was then secured to the acrylic



denture base [illegible] acrylic resin (Fig. 3).

The completed precision retained denture (Fig. 4) was extremely stable and removal and reinsertion was only achieved in one direction. The patient found the denture aesthetically more pleasing and functionally far more satisfactory than the previously worn partial denture.

Acknowledgements

I wish to express my thanks to Lieutenant Commander P W Edwards Senior Workshops Officer of the Royal Naval Engineering College Manadon for use of the workshop facilities and Mr G A Davies for his patience and skill in constructing the precision retainers. I am grateful for the permission of the Medical Director General (N) to submit this article for publication.

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PUBLICATION BY RN DENTAL OFFICER — ABSTRACT

WALKER R T & MORRANT G A (1975) Performance characteristics of air turbine handpieces *British Dental Journal* 139 227 232

[illegible] introduction of the Borden air [illegible] dental handpiece in 1957 was followed by a [illegible] number of different models in [illegible] [illegible] the principle of a [illegible] bearing [illegible]

Improved [illegible] handpieces has been [illegible] years and the large number of available [illegible] handpieces has emphasised the need for a method of comparing the performance of various types of turbine instruments.

This article discusses the problems of a stall pressure test and describes a method for determining true torque and power values. The results are compared and [illegible] assessed.

Wei-Hai-Wei

Harald Curjel

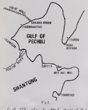


Fig 1

[illegible]

I am sure that all ... [illegible] ... China birds Wei Hai Wei the northern base of the China Fleet was our Tir-Nan Og

Geography

Wei Hai Wei lies in Lat 37 30 N and Long 122 10 E on the south side of the Gulf of Pechili near the easternmost point of Shantung Province (Fig 1) On the mainland the district has an area of about 260 square miles. About three miles away is the island of Liukungtao which is the "Wee Eye" of the sailors' affectionate memory (Fig 2) The Bay of Wei Hai Wei forms an extensive deep water harbour With the island forming a natural breakwater the anchorage is well protected except from the North East In the middle of the harbour is Sun Island with the ruins of an old fort It is about 1 200 miles to Hong Kong and 480 to Shanghai

Fig [illegible]

History

The walled city on the mainland was founded at the beginning of the 15th century The island was named after a certain hermit Liu During the Ming Dynasty a pirate named Wang Hsien Wu made the island his headquarters but was eventually driven out by the Imperial Forces

During the 19th century Wei Hai Wei remained a fishing hamlet but in 1888 a

permanent naval station for the Imperial Navy was established. During the Sino-Japanese War of 1894-95 the Chinese were defeated in the area on land and sea and Admiral Ting Juchang committed suicide on Liukungtao. The Japanese held the Island and district for some three years. The Western powers, taking advantage of the unsettled situation, hastened to stake their claims in North China.

In 1897 Germany gained a long lease of Kiaochow Bay and the town of Tsingtao (200 miles south of WHW) and this became the base for their Asiatic Fleet. It was from here that the crack battle cruisers *Scharnhorst* and *Gneisnau* sailed to Coronel in 1914. Russia then acquired a similar lease of Port Arthur and Dairen.

On July 1st 1898, when the Japanese evacuated Wei Hai-Wei under the terms of the Chefoo Convention, Great Britain stepped in and was granted the lease for 32 years. The Americans also obtained similar concessions in Chefoo (40 miles north west of WHW) and this port became the northern base for their Asiatic Fleet. It will thus be seen that, at the beginning of the century, this north eastern corner of China was one of great naval importance.

For 32 years Wei Hai Wei was administered by a British High Commissioner and on the whole things went happily and smoothly. The ending of the lease and the rendition took place on 1st October 1930. Captain Hsu, the new Chinese High Commissioner, arrived in one of two cruisers of the Chinese North-Eastern Navy. Salutes were fired by the British China Fleet and cordial fraternisation went on between the British and Chinese sailors.

The good-will which had been built up during the previous 32 years continued under the new regime. The Chinese High Commissioner lived on the mainland as did the British Consul. The concessions for the China Fleet to use the facilities of the island and the anchorage continued just as before.

Industries

Besides a prosperous fishing industry, salt was made by the evaporation of sea water in lagoons on the mainland. Salt fish and groundnuts were the principal exports. For local consumption wheat, kaoliang (millet), barley and maize were grown. In Shantung we were well north of the line which divides the rice eating Chinese of the south and those who prefer other cereals. There was also a trade in silk made from wild silkworms which fed on the leaves of the scrub oak rather than on mulberry leaves.

The People

Loyal and likeable as are the people of Hong Kong, I always felt that there was a particularly close affinity between the British and Shantung Chinese. Physically, he tends to be much taller and more burly than his southern compatriot. He is very loyal and honest with a good sense of humour.

The Wei Hai Wei Regiment

The Shantung man comes from warrior stock. The "Chinese Regiment of Infantry" (The Wei Hai Wei Regiment) Chinese manned with British Officers and NCO's was raised in 1899 and disbanded in 1906. They won their spurs in the Boxer Rebellion and the relief of the Peking Legations in 1900. Besides being brave in battle they were very smart on the parade ground and it was said of a detachment which went to Hong Kong to take part in a Coronation Parade that they were "the finest native troops ever seen".

I am grateful to the National Army Museum for information about the uniform. In 1904 the buttons showed the harbour of Wei Hai Wei with a junk in the foreground. The badge showed a

represented on of the Tientsin Gate with the name of the town in Chinese characters above with a scroll with the title "1st Chinese Regiment' below

The soldiers wore either blue or khaki with a red sash There were three types of headgear A flat-topped round hat with the brim turned up rather like the bluejacket's sennet hat a khaki slouch hat or a dark blue turban The influence of the Indian Army can surely be seen in these

The officers mess jacket was scarlet with yellow cuffs lacings and shoulder straps

The China Fleet in the 1930's

This consisted of the five ships of the Fifth Cruiser Squadron (surely these "County Class" cruisers were the most comfortable to live in that we ever had?) HMS *Medway* with her Submarine Flotilla One aircraft carrier One destroyer flotilla One cruiser which spent 9 months of the year alongside at Hankow (600 miles up the Yangtse) only emerging for her annual holiday and Fleet exercises During her absence one of the sloops took over the guardships duties at Hankow Three or four sloops All these ships except the river gunboats spent most of the summer in Wei-Hai Wei

The general routine was that at the end of April the main Fleet left Hong Kong and sailed north to Wei Hai Wei Here it remained working and playing hard till October Individual ships went on short flag showing cruises to many different ports The climate of Wei Hai Wei both in winter and summer was well nigh perfect and I well remember the tingling feeling of positive health which one felt at all times there The sloops tended to be on duty at the opposite end of the station to the Fleet We had hot sticky periods in Hong-Kong and up the Yangtse and came north to the snow and ice in the winter

During the winter months the anchorage at Wei-Hai Wei was almost deserted but a sloop or a destroyer would drop in for a few weeks at a time We tended to spend a good deal of time at Chuwangtao (190 miles to the north) where the English owned Kailan Coal Mining Administration had their headquarters Here we could lie alongside though lightly frozen in From Chinwangtao it was an easy visit to the Great Wall of China which ended at Shanhaikwan so that some of the essential but indelicate rituals needed to qualify officially as an "old China bird" could be performed

Medical Arrangements

The appointment of Medical Officer in Charge R N Sick Quarters Wei Hai Wei was held by a Surgeon Commander who was always a general surgeon When the Fleet was absent he wore another hat unique for a Medical Officer that of Resident Naval Officer When the Fleet arrived in April a medical mate' came up from HMS *Tamar* backed by a full complement of Sick Berth Staff and RNSQ was open for business The climate was so good and the open air life so healthy that the health of the Fleet was generally excellent But if there was any mild epidemic the Medical Officers and Sick Berth Staff from the Fleet backed up Sometimes an extra specialist was available For example in my time the PMO of HMS *Medway* was an ENT Specialist

It will thus be seen that during the summer months the MOIC had an interesting life of full professional endeavour But when the Fleet left in October he became the leisured laird of this wonderful little Island with golf shooting and fishing all laid on His winter solitude was shared by a Naval Store Officer (also married) and a Sick Berth Petty Officer I have a feeling that almost every young Medical Officer said to himself Some day I *must* become MOIC Wei Hai Wei!" (I know I did)

The Dockyard and Allied Facilities

There were a number of workshops which were used by the shipwrights and artisans of the fleet on a do it yourself basis There was a target towing tug for the battle practice targets and a number of harbour steam boats A Fleet oiler lay in Four Funnel Bay (between the island and the mainland) during the summer There was a rifle range on the island and the sloops generally did our musketry in spring or late autumn when the island was at its loveliest

Sports and Pastimes

The headquarters of the old Imperial Chinese Navy was the Fleet Canteen The Officers Club provided all the usual facilities of the period and kept one cosy welcoming room open for teas and snippers even in the winter During the season there was a weekly "Black Friday" dance when dinner jackets were the rig of the day The soccer hockey pitches and the tennis courts were made of hard packed sand very true and fast They were surprisingly clean and scrapes and cuts seldom went septic as did those sustained in other parts of the world I was not a golfer myself but I was always told that the 9-hole course was fun and well cared for There was a squash court in the Dockyard near the base of the Iron Pier Unusual things happened in Wei Hai Wei and on one occasion the Captain and First Lieutenant from a destroyer payne a flying visit landed to play squash on a sunny late October day On going up into the gallery to make their presence known they were surprised, but by no means disconcerted to find the court occupied by two nymphs who were enjoying their game in a state of complete and charming nakedness (I was told this story independantly by one of the officers and one of the nymphs)

Sea bathing in the summer was well nigh perfect There were regattas recreational sailing and fishing and Snn Island, in the middle of the bay was a favourite place for whaler picnics In the appropriate seasons there was excellent pheasant snipe and duck shooting on the mainland And at all times of the year under the summer suns or in winter snow there was an endless variety of country walks along the hillside paths between the little conifers on the island

Inter ship competitions of all kinds were keenly contested Perhaps the most original was the Rochester Cup" This trophy was competed for in a sort of "multi athlon event between the wardrooms of *Kent* and *Medway* who were both Chatham manned This was a sort of relay race in which opposite numbers from the two ships competed in traditional legs I forget them all but someone swam 100 yds someone else then yulohed ashore in a two man sampan someone shuffled along the Iron Pier wearing diving boots someone rode a donkey back race the Senior Engineer acted as puller for the Chief in a ricksbaw race and so on and so on The final event consisted in the rival Captains playing the first hole with putters speed rather than the number of strokes being the important thing Cinema band and concert party performances regularly enlivened the evenings

The Wei-Hai-Wei Season

Because of its perfect summer climate Wei Hai Wei was very popular as a resort quite apart from the presence of the Fleet for holiday makers from Hong Kong Shanghai Tientsin and Peking There were few perks" for naval wives in those days the one exception being that the empty submariners cabins in HMS *Medway* could be occupied by naval wives and relations for the passage north There were four hotels on the mainland and one hotel plus a number of bungalows for hire on the island During a hot summer the supply of drinking water on the island became strained On

most mornings a small fleet of sampans put off from the Stone Pier loaded with empty water breakers which the various ships had agreed to keep filled for their friends The small ships who could be more informal also ran "bath-lists and the sound of a soprano voice singing cheerfully in the bathroom in the dog watches indicated that Mrs A or Miss B was performing her toilette

The Sampan Men

An essential and much-loved group of people were the sampan men The Wei Hai Wei harbour sampan was a sturdy bluntbowed flat-bottomed craft about 18 feet long It was propelled by two yulohs which were long oars with a slight bend between the loom and the shaft They were used in a "fish tail" motion similar to that of sculling a dinghy but the yuloh pivoted on a metal pin rather than lying in a half moon cut out of the transom One was worked from the stern and one from a short wooden bar projecting over the port side in alternatively converging and diverging strokes From the loom of the yuloh a length of rope ran to a ring in the floor of the boat One held the middle of the rope with one's right hand and this gave a sort of powerful bowstring twist to one's stroke In the winter a padded glove for the right hand was permanently built in to the rope The sampan men were affectionately known by nicknames in which they delighted FISH-FACE TOMATO FACE DOG-FACE etc My own ship (HMS *Sandwich*) was looked after by a splendid man named FISH-FACE whose real name was Tsung Shu Wen (Fig 3) While he did not have the face of being the Flagship's sampan man he was the only one to remain in business throughout the year (Fig 4) Often as we came into Wei-Hai-Wei in a winter snowstorm as soon as the cable had rattled out the light on Fish Face's sampan would come bobbing out from the Stone Pier and we would hear his cheery voice Sander weish ort light Fish Face come and he would be alongside bulky in multiple padded coats ready to look after us Sometimes his sampan would lie alongside the Stone Pier at night but as often as not he would lie up astern of us and ride out the weather He and his No 2 would come on

Fig [illegible]

FISH.

(Tsung Shu Wen.)

Many years Sampan man in Weihaiwei
Customers waited upon without fail
in any weather;
Also Sand removed letters delivered
Painting and general jobs undertaken

(Chang Fong, Weihaiwei.)

Fig 4 [illegible] *trade card*

board with their food tins and receive free the food 'gash' from the messes and galley which was their main source of food. Occasionally I would give Fish Face a present of a few dollars and take him to spend it in the ship's canteen. He made his small purchases with the air of a child let loose in a toy shop. A tin of sardines was his favourite luxury.

Fish Face identified himself fully in all our ships doings. He transported the water breakers of our friends and brought the messes off for their baths. He was a firm friend of our ship's Airedale 'Jack' (whom I eventually brought home to England). I would tuck two $10 cent notes into Jack's collar and Fish Face would take him ashore for his morning expedition, picking him up from the Stone Pier whenever Jack condescended to return there.

Our excellent staff of 'official' Chinese stewards and cooks were Cantonese and recruited in Hong Kong. But most of the ships' company messes had their own unofficial 'mess-boys' who were recruited in Wei Hai Wei. Each member of the mess contributed about 2 dollars a month for the boy's wages which meant comparative affluence for him. They had space for their sleeping mats and shared the food in the mess, perhaps modifying it a little with rice or noodles. It was a generally happy arrangement.

On the day of the Commander-in-Chief's inspection a traditional naval manoeuvre took place in which all the unofficial boys together with all the buckets, etc. which could not be brought up to inspection standard were embarked in sampans which lay off at a discreet distance until the inspection was over. The manoeuvre of course was well known to and accepted by the C-in-C and his staff.

The Village

There was one small street of shops near the Stone Pier dominated by the tailor's shop of the famous SIN JELLY BELLY (Fig 5). He was an excellent tailor but was inclined to be a bit of a male Chauvinist. If

Fig 5 Bathing Beach [illegible] Sin Jelly Belly's tailor shop [illegible]

a missee required his services it was often on the cards that she would have to embark in a sampan after Jelly Belly's terse "No can do My blother mainland side more better tailor for missee"

Yin Deh Tai the No 1 shoemaker was another dignified character With two strips of paper torn at strategic places with his thumb nail he would measure your feet and produce a perfect pair of hand-sewn leather shoes for about 10 dollars (around 18/s) There was no question of any nonsensical breaking in As I have size 12 feet it was a standing joke for Yin Deh Tai to declare "Sander weesh doctor velly big feet have got two dollars more I think" When he made me a pair of half Wellingtons the ships postman told me that the finished articles were ceremonially displayed outside the shop on a table with a red tinsel spangled tablecloth

The other shops mostly sold the curios which we all collected They were absurdly cheap by today's prices but I feel that the articles in lacquer cloisonne damascene Chinese silver or pottery were much more genuine than the factory made items of today The orphans in the convent schools of mainland Wei Hai Wei and Chefoo produced exquisite embroidery on silk or linen

Natural History

The district was excellent for the ornithologist especially during the late autumn and winter being on one of the north south migration lines Of the mammals on the island I was most intrigued by the hedgehogs On moonlit nights these could be found on the golf links in large numbers Far from being timid like the English ones the Wei Hai Wei hedgehog was courageous and even aggressive and even the presence of Jack the rollicking Airedale made no difference The hedgehog never rolled itself into a ball but just turned its back with a rather nasty look, and went on feeding leaving Jack to prick his nose

Piracy

This occupation still flourished in the 1930s Without wishing to get involved in "swing the lamp" piracy stories there is just one which I think was rather unique and worth telling At Chefoo (40 miles north west of WHW) the China Inland Mission maintained an excellent boarding school for the sons and daughters of the missionaries whose parishes were scattered all over the mainland Due to the heat the summer holidays were short and the children remained in Chefoo but at Christmas there was a long holiday to enable them to visit their parents In the remote parts of mainland China For the return a coastal steamer was chartered which started in Hong-Kong and then came up the coast calling at all the ports and picking up the groups of children as they assembled after their journeys from the interior The steamer's last call was at Liukungtao to pick up Miss PMO On this particular occasion the steamer having made its call at Tsingtao (200 miles south of WHW) was pirated on the way to Wei-Hai Wei and disappeared for several days I later heard from several eye witnesses including a Bishop whom I met many years after in England that an enjoyable time was had by all The Chinese even pirates adore children and when they found that the ship was full of cheesis and their "velly not rich" attendants the pirates devoted themselves to delivering the children to Chefoo unharmed and unfrightened I was told that a distinct and romantic children's party atmosphere developed and that the only time when revolvers were in evidence was when the cooks in the galley were being enjoined to "catchee No 1 cleacle puddine for cheesis" As Miss PMO whose social life as the only unpirated girl in the school was in ruins for that term said sadly "Oh

Mummy if *only* the pirates had done it after Wei Hai Wei

The End of an Era

I am most grateful to Surgeon Rear Admiral A A Pomfret CB OBE who was the last of the line of MOICs for an account of the end of the story He says The Japanese occupied Wei Hai-Wei in March 1938 In general they respected the British concessions on Liukungtao but there were several incidents from time to time Finally in 1940 they refused to recognise a renewal of further concessions Everything of value including the steamboats was sent to Hong Kong without trouble and finally I was withdrawn and proceeded to Shanghai and on to the UK in mid 1940 There was no hand-over and no interference with my departure As regards the local inhabitants several including Jelly Belly went to Hong Kong many joined the guerillas on the mainland but as far as I know I don t think that many were murdered by the Japanese

The Aftermath

After having suffered for their loyalty to the British in Wei Hai Wei those who left the island suffered alongside us again at the hands of the Japanese in Shanghai Hong Kong and elsewhere After the war I was told that there was a colony of some 200 Wei Hai Wei people living in Hong Kong and hoping that the old times would return and the China Fleet would sail north again

In Singapore two men especially would have been well known to anyone who served there though they would just have been regarded as larger than usual Chinamen One was CPO Cheung Hok Yin We established that we had been contemporaries in the 1930s in Wei Hai Wei he having been to use his own words cheesi washee up boy in the Fleet Canteen He had a distinguished war record fighting on the Burma Road with General (Vinegar) Joe Stilwell s Chinese Army (shades of the Wei Hai Wei Regiment) and rising to the rank of Major

After the war Cheung came back to the Royal Navy and for many years was CPO Steward in the Wardroom in *Terror* and a tower of strength at children s parties Often as he brought my breakfast on a sheky Singapore morning, he would grin wistfully and say More better I think we go swimming off Stone Pier Wei Hai-Wei side He ended his career as Chief Steward at Admiralty House and now lives on pension in Singapore We still exchange Christmas cards bearing the phrase your old friend from Wei Hai Wei

The second was Tom Lee who was for many years the camp tailor in *Terror* He had served his apprenticeship with Sin Jelly Belly He was an excellent craftsman but I fear that times became increasingly hard for him as Malayanisation proceeded When in 1964 he came to say goodbye to me, we shook hands and there were tears running down his face as he said Only old mens like you remember Wei-Hai Wei men

I am most grateful to DNI for the following up to the minute information The port is used as a Communist China Naval Base for small craft and is an important fishing centre But for several reasons poor hinterland inadequate communications and competition from Tsingtao we do not believe there has been any industrial development The area therefore probably remains much as it was in the 1930s The name has now been abbreviated to WEI HAI

Acknowledgement

I am grateful for the permission of the Medical Director General (Naval) to submit this article for publication

Medical Museum, Royal Naval Hospital, Haslar

David O Haines

The recent decision to rearrange the Library and Museum facilities at Haslar meant that it was necessary to scrutinise the specimens on the shelves and to sort out a representative group to form the core of a well documented teaching museum to supplement the teaching library and audio visual aids. The whole of the present collection has now been sorted and those not suitable for display have been safely laid apart. The work of providing an informative catalogue for teaching purposes can now go ahead.

The criteria for inclusion of any specimen were as follows:

Was the specimen well documented? Unfortunately many were not and those in this group that did not come up to any of the other criteria were taken out of the display. One unusually well documented specimen from 1875 is referred to later in this article.

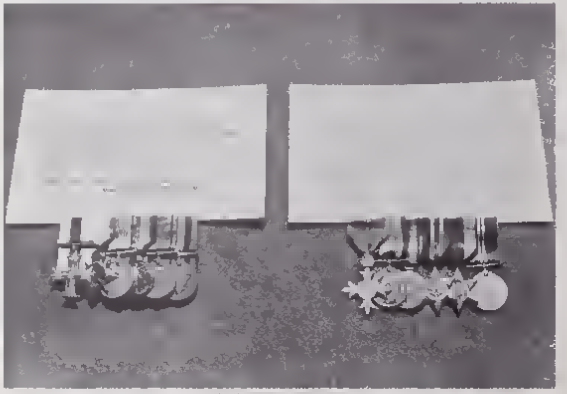
Were there clearly recognisable pathological features? In many there were not and there was no way of restoring these appearances once lost nor of confirming by histology disputed or unlikely diagnoses in such long dead material.

Was it unique or of outstanding interest? There were numerous examples of similar lesions even in the modern era therefore only the best have been selected. Unusual conditions especially with a strong naval connection have been retained even if undocumented or in poor condition.

It was a difficult task to be sure that the record search was complete and much is owed to the skill and knowledge of Mr C Parsons HSO the Librarian and Curator. Many specimens had illegible or incorrect labels.

The system of classification numbering and entering the catalogues had undergone numerous changes all of which meant that we had sometimes to search every page of every ledger to find or regrettably more often not to find a positive identification. Many ledgers have been used more than once with jumbled entries made in vacant spaces separated by many years or far away in topography. There is caustic comment on this in the beautifully typed entries made early this century.

Such identification as is present on specimens will be retained but the display collection will be catalogued very simply shelf by shelf numerically using a loose leaf system with clinical notes on the front of each page and pathological information on the reverse. In due course some of the more recent specimens will be cross referenced to histological slides available in the museum and no new accessions will be made without this backing (where appropriate). For the future it is planned to make use of some of the released space to stage temporary exhibitions and to form links with other museums within and without the Armed Services. It has already been possible to display the fine collection of instruments historical and foreign (Fig 1) for the first time and also to show off our recently acquired fine collection of medals (Fig 2). There is still much to do and the



[illegible] will depend a lot on the help of [illegible] volunteers since there is no possibility of making this a separately staffed and financed venture

Pathology 100 Years Ago

A specimen of Femoral Aneurysm was recorded as having been donated by Fleet Surgeon John Elliott and to have been reported in the *Lancet* of September 18 1875 (Fig 3) The article records the attempt at ligation in front [illegible] of the external iliac and sutured with [illegible] The patient succumbed four days [illegible] spreading infection attributed to the local devitalisation caused by the pressure of the tumour on its surroundings This is a condensation of thirty six column inches of majestic prose characteristic of the lengthy reports elsewhere in this journal One sample only to give the flavour During eighteen years service he has been in the hospital with intermittent fever [illegible] syphilis [illegible] constitutional)

Fig 1 *Femoral aneurysm*

retro peritoneally [illegible] form anaesthesia The ligature (with twisted hemp) resulted in the immediate cessation of pulsation in the large sac the wound edges were cleaned with carbolic acid lotion and [illegible] Others [illegible] health occasionally however [illegible] for loss at a time of a stitch between the left nipple He is of temperate habit and does not smoke The pathological [illegible] is

almost certainly a dissection as the history reveals that as a Royal Marine Coachman in Halifax he had ten days before admission lifted many heavy packages up to 3cwt and developed great stiffness and pain preventing sleep in the affected limb next day The visible and palpable lump then developed slowly not apparently deterring him from his duties as usual Ligature of the external iliac artery seems a very chancy proceeding even in our present state of knowledge of sepsis and patient care However elsewhere in the bound *Lancet* for 1875 (Vol II) there are several articles reporting the use of arterial ligature as a life saving measure in sepsis and gangrene of limbs so perhaps this procedure was not as outlandish as it seems Looking through any journal after one has found what is sought is nearly always rewarding (J K Jerome in 'Three men in a boat' found it frightening) This bound volume is no exception From the naval point of view perhaps the most interesting report is by Staff Surgeon John Mulvany on Alcohol as a generator of thermo electric currents in the system One of its modes of action I am afraid most of this seems like nonsense but the origin of these experiments is of great interest Mulvany's interest was to attempt to ascertain the mode of action of the generally agreed beneficial effects of the application of ice to the spine (in what diseases he does not say) He found that his volunteers could only be persuaded to participate after suitable libation When he received a present of an Indo European telegraphy flash galvanometer an instrument of the most marvellous delicacy to his surprise he found that he was able to detect notable increases of bodily electricity after administration of as little as one ounce of brandy In true scientific fashion he proposed a hypothetical analogue of the electrical generative effects of connecting two dissimilar nerves to those observed when dissimilar metals are linked He proceeded to animal models confirmed his vivisection results by experimentation on himself and applied the results in the clinical sphere This led him to the unsurprising conclusion that when the subjects of severe weight loss in tropical conditions were teetotallers and he found these men philosophising on the inutility of scrambling up the mountains of Seychelles instead of dashing at them *en etourdi* as their comrades did that his observations had borne fruit When rapid loss of weight is an attendant on copious perspirations—alcohol may be safely used in moderation He at least would not have doubts about displaying in the medical museum the paraphernalia of the rum issue which his successors were largely responsible for abolishing

Elsewhere in these journals many of the subjects are sickeningly topical The GMC is under fire on the subjects of the entry of women to the medical register and on the low standards of examination Medical officers of health are variously criticised and coroners come in for contumely Much of the correspondence has the disputatious personal slant one associates with the 18th century polemicist while some is frank self advertisement Let anyone who complains of the present day committee read the fully reported meetings of the GMC and BMA One opponent of women doctors must have been on his feet at the former for over two hours slanderous interruptions excluded! 1875 was the year of the first recorded swim across the Channel by Captain Webb and there is much editorial comment on swimming as exercise and the health giving properties of sea bathing Dr Foster Barnes scoops the pool (appropriate metaphor) by publishing Captain Webb's plethysmograph record demonstrating a Healthy Heart

If anyone has a mind for this sort of thing it would be worth searching the literature to see if there is any similar record

[illegible] the [illegible] units in the professional foot[illegible] [illegible] lasting weeks at a time which became the vogue soon after this period The Navy would have a special interest in any such discovery because the races were held at the Lillie Road Ground now covered by the Empress State Building home of the Medical Department (with others)

I have discovered on a recent holiday in Scotland that 1875 was a vintage year for tests of physical endurance Mr W G Bloxsom a member of what is now the Royal Aberdeen Golf Club played 12 rounds of the course it was then the Town Links of 15 holes and then walked an additional ten miles all within the space of 24 hours His score is not recorded This performance was surpassed in 1910 when Mr H B Lumsden playing the present long and difficult 18-hole course completed 12 rounds with an average score of 82½ (range 77 88) between 0220 and 2100 on a day in June

Acknowledgement

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PUBLICATION BY RN MEDICAL OFFICER — ABSTRACT

OSBORNE A B (1974) Three cases of retroperitoneal cyst with diagnosis on X-ray diagnosis by excretory urogram and review of literature *The Journal of Urology* 112 541–545

Retroperitoneal cystic masses near the kidney give rise to diagnostic difficulties The axarotory program (IVP) is useful in differentiation between intra and extra renal cystic lesions Three presented cases illustrate the benefit of objective interpretation of the IVP

A renal cyst typically causes compression of the surrounding renal tissue with distortion and displacement of the calyceal pattern since the lesion is within the renal capsule Displacement of the kidney at present is secondary and occurs only with cysts of large dimensions when calyceal distortion is at the same time maximal The illustrated adrenal pseudocyst caused considerable downward displacement and rotation of the kidney There was minimal distortion of the calyceal pattern despite its large size The lesion was not within the renal capsula and had not involved it in any way In case of the pancreatic cyst the calyceal pattern was distorted and the kidney was displaced The ethical duct [illegible] suggested intranal pathology It was assumed as a result of the destruction of the renal capsula at application relatively small [illegible] allowing sufficient pressure within the cyst [illegible] to transmitted through the renal vessels Diagnostic help is obtained from the degree of distortion of the calyceal pattern When distortion is maximal of intrarenal parenchymal pathology is likely Displacement of the entire kidney with minimal or no calyceal distortion suggests extra renal pathology An exception to this case of extra renal pathology that I have is integrity of the renal capsula This can be [illegible] pyelographic appearances similar to those of an intrarenal lesion

Help in diagnosis can be obtained by application of the principles mentioned which appear in summarise the findings of others

LETTERS TO THE EDITOR

Sir

At the risk of appearing unduly reactionary about postgraduate education and higher qualifications for naval medical officers I am not entirely convinced that we are not in danger of losing our way the Royal Navy way

One expects certain disciplines to bear Consultants and Specialists but I beg to doubt the necessity for everyone to be in a little box with a qualification to prove that he has a right to be in that box this naturally tends to prove that he has no right to be in any other box Also as progression through the Service begins to depend more and more on one's ability to pass examinations we will be in danger of making things too difficult for the average doctor (and by the nature of things we tend to get only average not brilliant doctors in the Service) so recruiting will become even worse

It is just possible that some of those present at the Annual Meeting of PMO's in Empress State Building on 16 May 1975 may not have understood my allusion to Gilbert and Sullivan when we were discussing the postgraduate education and additional qualifications which are apparently needed nowadays in order to make the modern working doctor The three quotations are as follows and are of course from The Gondoliers

When you have nothing else to wear
But cloth of gold or satins rare
For cloth of gold you cease to care —
Up goes the price of shoddy

When every blessed thing you hear
Is made of silver or of gold
You long for simple pewter

When everyone is somebodee
Then no one's anybody

The roundness of a naval medical officer's life used to be one of the great joys of our Service I think it will be a black day when we cease to have an opening for scrub deck doctors the Jack of all trades whose all round ability is so much at a premium in time of war I should be very interested to learn through your columns what others feel about this very important subject

I am etc.
G R Wheldon
Surgeon Captain Royal Navy
Principal Medical Officer

While as Dean of Naval Medicine I have a vested interest in postgraduate education I have a good deal of sympathy for Surgeon Captain Wheldon's views In recent conversations with the Bureau of Medicine and Surgery of the United States Navy it transpired that over specialisation had emerged as one of the major problems facing the United States Navy Medical Corps today

The need for general duties medical officers of high quality and all round ability

is as great today as it ever was and the Institute of Naval Medicine's long range training programme is designed to help seagoing medical officers acquire postgraduate degrees which will prevent them feeling at a disadvantage viz a viz their hospital and civilian colleagues in a medical world increasingly dominated by the gods of academee This may be an undesirable state of affairs but it is difficult to see how the Royal Naval Medical Service can contract out of the system at this stage

However I cannot allow the statement that we tend to get "only average" not brilliant doctors in the Service to pass without comment By definition one always tends to get the average in any situation but a close look at the Navy List indicates that the Naval Medical Service today certainly has its fair share of brilliant doctors and in my view a good deal more than its fair share

Editor.

Sir

Reading your editorial (JRNMS Vol 61 No 2) I must say I had certainly been wondering about the long term viability of the Journal in these present days of financial stringency and the reducing size of the Royal Navy I very much like your suggestion of joining in with the shipping industry as a whole to become the Journal of Maritime Medicine I would have thought that would have had a very useful function indeed and would obtain a much more Internationaf readership also which could not but help to increase the numbers of readers and the quality of contributions No doubt it will still be possible to keep a Royal Navy section within the Journal if thought to be appropriate

I am etc

R R A Coles

Surgeon Commander Royal Navy (Retd)

Sir

I write in response to the editorial invitation in the current Journal to make some observations particularly as a former interested correspondent to the Journal

In the past serving at sea or ashore abroad the vicissitudes of national politics and periodic economic gyrations seemed remote we were absorbed in our naval environment almost entirely It is somewhat different now The Navy no longer world based or manned armed or financed in insulated self sufficiency functions in a smaller but tactically more powerful force The Medical Dept's role to comply became more adept and knowledgeable in general naval and maritime skills and science Thus slowly the environmental sections of naval medicine and practice developed A major turning point in concept as another is to be faced — to consider the direction and format of the Department's shop window — the Journal

Heading the list of a formidable agenda is a resolution of a decision — who should the Journal be for — Naval or associated medical and dental officers only? I think it should be extended to have a broader base of supporters to include the Medical Service Officer group the Scientific Service the Hydrographers and Survey group the Chemical and Microbiological group at Porton the Royal Air Force and Army Physiological and Military Studies groups Of the extra mural associates consideration of the Medical Research Council groups Oceanographic organisations University Study groups in Pressure Medicine Deep Sea Diving and Oil Rig organisations and suppliers of Deep sea materiel

What could be expected of this larger membership? I consider that in addition to the technical interest articles of present clinical scope the Journal could promote notes of some general interest — and thereby build up a modern digest library — be it historical biographical effort a biological or geographical or oceanographic or materiel subject Contributions from the

brother ARTS and SKILLS — the Scientific Service Operational Research Divisions Procurement sections Physical Medicine subjects could all be sources of subject matters

When you consider small items of allied interest contained in the reports of the well organised major meetings of the BMA the Royal Society of Medicine sections the general proceedings reports from NATO SACLANT or from our allied confreres the Editorial Board would soon have a work load requiring selection on the agreed size of the Journal which is within economic bounds One primary essential should prevail — continuity of the high standard we were proud to be associated with as past contributors In consideration of a change of title Journal of the Royal Navy Medical Service

I am etc
Joel Glass
Surgeon Captain Royal Navy (Retd)

TRI SERVICE MEDICAL GOLF TOURNAMENT

The annual Tri Service Medical Golf Tournament 1975 was a triumph for the Royal Naval Medical Service The results were

RN Medical Service
v
RAF Medical Service
at Ffeet
RN won by $6^1/_2$ matches to $5^1/_2$

RN Medical Service
v
Royal Army Medical Corps
at Liphook
Match drawn $7^1/_2$ each

The team this year was captained by Surgeon Captain David Haines RN

Correction

The incidence and epidemiology of tinea pedis in the crew of a nuclear submarine P 62 vol 61 (1975)

Sentence 3 of the paragraph headed Lesions on page 93 was printed in error and should be deleted from the text Percentages quoted in this sentence simply apply to the total number of men wearing the two different types of footwear and do not relate to the numbers exhibiting clinical disease The correct figures for the incidence of clinical disease are quoted in the previous sentence and the differences between the two footwear groups have been shown to be statistically significant at the 5 per cent level

THE ROYAL NAVY MEDICAL CLUB DINNER 1975

The annual dinner of the Royal Navy Medical Club was held in the Painted Hall Royal Naval College Greenwich on Friday 12 September 1975

The President, Surgeon Vice Admiral Sir James Watt KBE, QHS, MD, MS, FRCS, FRCP made the following speech:

Second Sea Lord honoured guests, members of the Royal Navy Medical Club it is a great pleasure to welcome such a large number to our fiftieth Annual Dinner Without in the least detracting from the excellence of this year's menu which gives me the opportunity to thank on your behalf First Officer Spencer the new Mess Manager and her staff we could have no better baseline for the inflationary spiral in which we find ourselves enmeshed than the menu and cost of the first dinner of the Club which was held at the Criterion Restaurant in 1909 They began with oysters followed by a choice of soups then fillets of sole and escalope of veal To allow a brief respite for gastronomic contemplation they were then served with a champagne sorbet before attacking a fresh casserole of pheasant an exotic sweet ices dessert and coffee For all that it cost foundation members the handsome sum of 7s 6d or in terms of today's devalued currency $37\frac{1}{2}$ new pence

Our fiftieth dinner also happens to be the last to be organised by Mr Chapman who for the past 13 years has cheerfully carried the major responsibility for this annual event Mr Chapman will be retiring from the Medical Department which he joined 15 years ago after leaving the Royal Navy as a Sick Berth Chief Petty Officer He has come to be regarded with affection by members of the Club with whom he has corresponded over the years and to mark our appreciation of his services I have tonight presented him with a retirement gift on your behalf We wish him a long and happy retirement

For the Medical and Dental Services the past year has often brought anxiety turbulence and frustration as the Defence Review following hard upon the heels of the Defence Medical Services Inquiry has overtaken the first fruits of much painstaking and constructive planning to challenge each new initiative and every aspect of our medical and dental organisation The withdrawal from Singapore and Mauritius deprives us of flourishing naval group practices we can ill afford to lose although we hope to retain the new medical centre in Hong Kong We shall also lose the naval hospital in Mauritius and consultant and training posts in the tri Service hospital in Singapore while reduction in the size of the Fleet will diminish opportunities for foreign travel We have lost one Surgeon Commodore in the Medical Department and there will be some adjustment of our manpower ceiling

When we face dangers which threaten our cherished schemes and disrupt our best conceived plans it is tempting to allow discouragement to triumph and Sir Frederick Catherwood[1] reminds us that

action of any kind tends to be controversial because it normally involves disagreeable change in the established pattern. The temptation to do nothing and hope for the best is very strong. It is much easier to lay blame for action than for inaction." At the risk therefore of laying ourselves open to blame we have taken a number of recent initiatives to compensate for these losses by increasing professional opportunities and the quality and spectrum of training bearing in mind that cuts may operate in two ways — either to axe ruthlessly a mature and living organism or to prune judiciously its dead and dying branches that those which remain may flourish.

Our task has been made easier because we have recently completed with the strong support of the Second Sea Lord our Principal Guest this evening the reorganisation of the Medical Service under our three new Surgeon Rear Admirals the Dean of Naval Medicine who coordinates research and postgraduate training the Surgeon Rear Admiral (Naval Hospitals) responsible for all technical and professional requirements in the hospital disciplines and the Surgeon Rear Admiral (Ships and Establishments) who oversees the fields of general duties and general practice. The three Surgeon Rear Admirals are consultants in their own specialties of physiology, orthopaedic surgery and community medicine and represent the apices of the three career ladders required by the technical complexity of the modern Navy.

In the context of today's situation the words of James Lind[2] written over two centuries ago appear singularly appropriate "in times of public tranquillity" he said, when only small ships of war are employed and are manned with sound and seasoned sailors when their voyages are short and sufficient opportunity is allowed to refresh in harbour the seamen of His Majesty's Service are in general healthy but circumstances widely differ in the turbulent state of war or when any emergency requires the immediate equipment of a large fleet." Sir Gilbert Blane[3] sounds a similar cautionary note in 1830. It is on the numbers and vigour of hands that success must depend in the conflict with the elements and in the hour of battle. Money has metaphorically been called the sinews of war, but the most indispensable article for the efficient purpose of war is the sinews, literally and properly so called, belonging to the living engines by whose energies it is carried on."

Since we are dining tonight at Greenwich it might not be idle to speculate upon what modern surgery might have done for Samuel Pepys irritated constantly by his bladder stone[4]. It might have kept him from so frequently seeking solace in the bottle it might have prevented him from beating his wife it might have made him more sympathetic to Lower's plan to make Greenwich a naval hospital and it might just conceivably have prevented the Navy being saddled with a system of administration from which it still suffers. Or who can tell whether Nelson returning to Naples from the Battle of the Nile[5] with raging toothache and intermittent fever would have succumbed so readily to the solicitous tenderness of Lady Hamilton if a modern naval dentist and a modern ship's doctor had been with him on board *Vanguard*?

Today's naval ailments however are not only the well established and relatively straightforward clinical syndromes of general and hospital practice but may result from exceeding the critical levels of atmospheric pollutants or of ionising radiation from the task-related tensions of a ship's operations room from the physiological stresses of hyperbaric pressure upon the diver hazardously exploring the sea's bed or from the psychological stresses of the helicopter pilot endeavouring to

locate his tiny tossing landing pad on the cluttered deck of some patrolling frigate in an empty turbulent rain lashed ocean

This is why the Defence Review demands action rather than inaction for work on such problems requires both intellectual ability and strong motivation to the Service They are not going to be mastered by academic drop-outs the professionally indolent incompetent or malcontent The post Defence Review situation will demand an elite cadre of skilled and versatile medical dental Medical Service and Reserve officers trained to the highest standards and provided with career incentives which will retain such men of quality in the Service for to quote Sir Frederick Catherwood again there is nothing more deeply satisfying in life than creative achievement and I am convinced that those career incentives must include an opportunity to make original contributions to medical and scientific knowledge within the satisfying practice of a broad spectrum of maritime medicine which will carry a man to the highest rank in a congenial environment with the best of modern equipment and facilities at his disposal

I think we have made a promising start Clinical environmental and industrial research flourishes Naval officers participate in professional meetings at national and international level The home naval hospitals are recognised for higher training in all the major specialties Training in group practices abroad is well established and we are slowly extending general practice training in the United Kingdom Splendid new medical and dental centres have been or are being built We are shortly to begin the final phase of the building programme for the Institute of Naval Medicine and the first stage in the redevelopment of the Royal Naval Hospital Haslar New units have been added to the Royal Naval Hospital Plymouth under the energetic direction of Surgeon Rear Admiral Binns and a realistic new role has been found for the Royal Naval Reserve who now effectively complement their active service brethren Without them the Service would be unable to meet its far flung commitments

In spite of the Defence Review therefore solid progress has been made and a new spirit of partnership is abroad which is reflected in excellent recruiting both of cadets and direct entry medical officers Where we are failing however is to induce enough short service officers to whom we have given a great deal of training to turn over to 16 year and permanent service commissions This is no doubt due to uncertainty engendered by the Defence Review which at least has the merit of reducing some of the commitments that have contributed to the degree of over stretch from which all have been suffering and I dare to hope that when the pattern for the future finally emerges many of our best short service officers will recognise that a naval career will be stimulating and rewarding

We have too many eminent guests this evening to mention every name but I should particularly like to welcome Dr William Longmire Professor of Surgery in the University of California Los Angeles and formerly President of the American College of Surgeons Our official guests include Sir John Richardson who crowns a distinguished career with the Presidency of the General Medical Council Tonight I welcome him in another capacity as Chairman of the Armed Forces Medical Advisory Board consisting of some of the profession's most eminent members recently established to advise the Defence Medical Services Coordinating Committee which includes the three Medical Directors General It is also a pleasure to see here Sir John Gray Secretary of the Medical Research Council which generously sponsors a great deal of fruitful medical

research into essentially naval problems

The Royal Air Force is represented by its Director General of Medical Services Air Marshal Sir Geoffrey Dhenin and its Director of Dental Services Air Vice Marshal MacLeod We have a close affinity with the Royal Air Force on account both of the highly technical nature of our respective Services and the warm personal relationships which exist

Professor Linford Rees newly elected President of the Royal College of Psychiatrists not only enjoys a world wide reputation but is one of those psychiatrists whom patients intuitively trust with their problems knowing that they will certainly not be made worse and may very possibly become considerably better Dr Wilfrid Harding too appears tonight in a new role and we are delighted to welcome him as President of the Faculty of Community Medicine

It is our pleasure to have with us Mr George Gibb Chief Dental Officer at the Department of Health who served as a RNVR executive officer during the war You will therefore understand immediately the reason for his rapid ascent to the top administrative post We also appreciate the interest of Mr Howell Dean of the Faculty of Dental Surgery at a time when the Director of Naval Dental Services is actively following up the initiatives of his predecessor in the academic field

Professor Byrne President of the Royal College of General Practitioners has provided the stimulus for long overdue extension of naval general practice and we thank him for this We also welcome the Reverend John Creber Principal Chaplain of the Church of Scotland and the Free Churches an old friend who is held in great affection by countless sailors and their wives to whom he has always been ready to lend a sympathetic ear The Chaplain of the College the Reverend John Oliver is another of our guests

I know how much we all appreciate the privilege of dining year by year at Greenwich and I hope that Captain Wilson and Commander Hallett will recognise that our thanks are no mere formality During the year the Admiral President and his staff opened their doors to the naval medical administration course which proved an outstanding success For many reasons therefore we are indebted to the College and its staff and I hope our long association may long continue

This evening's entertainment was provided by the orchestra of Her Majesty's Royal Marines HMS *Ganges* and I have already thanked the bandmaster Warrant Officer Wheating for his splendid performance If Surgeon Captain Kinsman's rollicking march lacks the poignant chords which have marked some earlier encounters between sailors and surgeons that is because of the harmony which has been so carefully nurtured by more recent holders of the office of Second Sea Lord and Chief of Naval Personnel on the Admiralty Board

We are therefore extremely fortunate to have as our Principal Guest Admiral Sir David Williams one of the most distinguished holders of this high office and one of the best friends the Royal Naval Medical Service has ever had I could dwell at length upon his distinguished career but it is sufficiently illustrative to know that he was promoted Rear Admiral in 1970 while Captain of the Royal Naval College Dartmouth and that he served as Second in Command of the Far East Fleet then as Director General Naval Manpower and Training which in 1973 brought promotion to Vice Admiral and the following year promotion to full Admiral and his present appointment — a quite remarkable achievement!

As after dinner speakers often do I might recount anecdotes which have grown up around him but he is not that sort of

person and enquiries of old shipmates — officer and sailor alike — invariably evoke expressions of admiration and respect followed by warm tributes to his leadership and humanity

The picture which emerges is of a dedicated and thoroughly professional officer of the highest integrity sensitive to every nuance in every situation involving human relationships, sympathetic just and decisive in handling them Those of us who have been privileged to work with him know him to be a kindly and generous friend whose twinkling eye detects humour in even the gravest issue and who operates from a stable family base with a charming wife and family

One of our Surgeon Captains has suggested that we should be holding a Thanksgiving Dinner this evening in acknowledgement of the generous terms of the recent pay award to Service doctors and dentists Those of us who experienced the anguish and uncertainties caused by the approaching deadline were indeed thankful that at that critical time our interests were being jealously guarded by the Second Sea Lord himself a formidable champion of our cause In this spirit of thankfulness may I therefore call upon members of the Royal Navy Medical Club to rise and drink to the health of all our guests

Admiral Sir David Williams, KCB Chief of Naval Personnel and Second Sea Lord, replied on behalf of the guests

The affairs of doctors and dentists take up a large amount of my time but not a disproportionate amount There is much in the Navy which needs to change and is changing due to a combination of pressures from outside and inside the Service We resist or reduce these pressures at our peril and indeed our very survival depends upon our sensible reaction to them and the moulding of our attitudes and organisation so as to harness them to the best interests and the special needs of the Navy

It is no good in these days saying "I am all for change so long as it does not alter the way of life to which I have become accustomed"

But to understand the particular problems which confront us and to appreciate what we are about in the Navy in general and in the people's side of the business in particular we need to put matters into context to provide a background Let me start by mentioning the outcome of the Defence Review You will all be aware of the decisions to reduce our ships in the face of reduced commitments and to trim the number of people we employ We all sincerely hope that this Defence Review will not be followed by a series of further cuts and pruning What we dearly need is a period of stability to set our officer and rating manpower houses in order — indeed it gives us just that opportunity and particularly in the medical world — so that we can perpetuate our known reputation for a Service with high morale a sense of purpose a deep professionalism a capacity for enjoyment and a pride in ourselves

The other matters of context are social The most important is the social background of the country as a whole In formulating our plans we have to take into account modern attitudes after 30 years of

References

1 CATHERWOOD H F R (1969) *The Christian Citizen* Hodder & Stoughton London

2. LIND J (1779) *An Essay on the most effective means of assessing the Health of Seamen in the Royal Navy* London 3rd Ed

3 BLANE G (1830) *A brief statement of the progressive improvement of the Health of the Royal Navy* London 1st Ed

4 POWER D A (1895) *The Medical Duties of Mr & Mrs Samuel Pepys* Lancet 4/60

5 POCOCK T (1968) *Nelson and his World* Thames & Hudson London

peace towards defence and discipline towards service and the Services and towards patriotism and loyalty on the one hand and towards anarchy the rule of the mob and vocal minorities on the other We have to thread our way carefully so as to maintain standards and traditions which are both attainable and sensible We have to be alive and alert to the possibility of the erosion of these standards and the levelling down of authority responsibility and privilege We have to safeguard the essential ingredients of discipline and play them with imagination and common sense

The second context is that of the modern more liberal attitudes — in response to political pressure — towards the commitment of the sailor to the Service and the casting of the regulations so as to give him the right to get out when he wants to do so Of course these measures are not necessarily against our interests and I welcome them — there is certainly no going back on them in principle they do produce generally more contentment and a sharpening of the feeling that those who stay on really belong and to use the vernacular are 'all for it' But we must also be very careful to ensure that such liberalisation is not at the expense — in terms of turbulence and disturbance — of those who stay in and that the interests of those who stay in are equally adequately safeguarded

The next context is the extent to which modern society has become increasingly based upon comparison To the combatant we now pay a military salary which is based upon comparability and we have to keep a close eye on civilian norms Not only in matters of pay but also in conditions of service we have to make sure that we sustain comparability and do not get too far away from prevailing social conditions But if we do diverge *or have to* do so by the very nature of the sea going life then we must try and provide adequate rewards in terms of opportunities allowances inducements and perks to try to redress the balance

This philosophy of comparability is nowhere more marked than in the pay and allowances of doctors and dentists and all of you will know the recent and successful efforts which we have made to keep the analogue relevant to prevailing conditions outside and within the Service

Comparability is also of fundamental importance in the matter of equivalent civilian qualifications We must keep pace with prompted modern developments in graduate and postgraduate qualification and training because otherwise we can no longer either compete or cope and we very quickly perhaps overnight sign our death warrant This is characterised firstly by a disastrous lack of quality secondly by a lack of suitable volunteers and thirdly by serious retention problems at every level and particularly at the higher levels of specialist and consultant activity

So much for the contexts in which we are operating and the particular and special relevance of them to the way in which we run the affairs of those represented here tonight

MDG is right to mention and to take justifiable pride in the recent reorganisation in HQs and in the field The next few years will be testing times and we shall need clear thinking and resolute action if we are to reap the full benefits of this imaginative adjustment He is also right to stress the importance of environmental studies in the air on the surface and under the sea Skilled informed people with that touch of genius which is well described as an infinite capacity for taking pains are needed here too

And throughout all this we need to guard our growing reputation and enrich and enhance it by the evident quality of our work and people at all levels Only in this way will we continue to have the ready entree not only to facilities and conferences

nationally and internationally but also and perhaps more importantly to the cooperation minds and goodwill of medical and dental people everywhere a distinguished cross section of whom are your guests tonight

But in all matters where it is both necessary and tempting to keep pace and if I may say so to initiate and to lead It is important to remind ourselves that we exist for naval reasons and that all our efforts must be channelled towards supporting the Royal Navy in its operational role Lest you think that I am casting this too narrowly I realise that the proper support of the operational fleet comprehends many matters which cannot necessarily be simply connected in a direct way with men and women in uniform

But I do ask you to bear in mind three important points Firstly the objectives of the naval medical set up which are to conserve naval and Royal Marines manpower to train for war and to form a nucleus for the expanding of the naval Medical Branch in war time Secondly whether you are undertaking training or research hospital work or administration I ask you to remember that the care-cure and protection of the patient are paramount And thirdly that the MA the MT and the members of the Nursing Service are all of the greatest importance — without them you would not be able to undertake your task at all

I look to the Medical and Dental Branches to continue to make their unique contribution to the Navy and to bring to bear those very qualities which have characterised their contribution over the years You will know that there is much going on in the Second Sea Lord s department We have looked at the future of the Engineering Branch the future of the WRNS the future of the RNR and the future of training establishments ashore

And we will have now to make certain that the plans for medical support are still realistic in the changed circumstances following the Defence Review both from economic and operational viewpoints

The Admiralty Board has recently made many decisions about the future As with all matters concerning people they believe it is important to evolve sensibly and to try to give that kind of stability which professional people deserve and in which they flourish I say to you all that in the future we need inflexible determination jealously to guard the professional standards in our keeping and I pledge to you — as I do to all others for whom I am responsible — that this is my aim and firm resolve"

BOOK REVIEWS

QUANTITATIVE NUCLEAR CARDIOGRAPHY Edited by Richard N. Pierson Jr, Joseph P. Kriss, Robert H. Jones and William McIntyre. pp 289. Chichester: John Wiley & Sons. £12.00

Primarily intended for the specialist this book gives a good compact ... survey in depth of recent advances in non-invasive radioisotope cardiography. By its very nature it is intended for specialists in cardiology, student and ... medicine and bio-engineering. The precise and detailed information given can be best utilised only by those with knowledge of and access to highly complicated and expensive equipment ... where interdisciplinary support and back up is available. It is therefore probably of little interest to the general physician.

Most of the chapters describing the mathematical approach to the quantitative techniques employed and the detailed analysis of dynamic measurements are written in the ... jargon which ... Amongst ... writing ... cross talk contamination between compartments ... length of the discussion ... to the amount of ... On the other hand detailed descriptions of the imaging techniques employed ... presentation of visual evidence ... discussion on ... pharmaceuticals ... the book ... [illegible]

M A M

THE EYE IN GENERAL PRACTICE By C. R. S. Jackson. Second Edition. Pp 174. Edinburgh: Churchill Livingstone. £5.50

This splendid little book ... to the Profession of ... General Practitioners ... to recognize and treat ... eye diseases ... [illegible]

It ... a ... of information ... expressed and ... illustrated. It is ... readable and can be thoroughly ... [illegible] purpose.

The Seventh edition contains ... and ... [illegible]

M G W

BASIC ANATOMY AND PHYSIOLOGY OF THE HUMAN BODY J. Robert McClintic PhD. Pp 574. Chichester: John Wiley & Sons Ltd. £7.90

Students entering the Professions Supplementary to Medicine will welcome this book in which the text is reduced to a minimum and replaced by concisely expressed chapters ... illustrated with ... accurate diagrams ...

The author sets out to ... the student ... [illegible]

... [illegible] ... chapter ... helpfully ... [illegible] ... paragraph to seek further ... chapter. Summaries and self test questions ... reader to progress at his own pace. ... chapter ... encourage ... comprehensive glossary giving definitions and pronunciation provide valuable ... student encountering ... terms ... Frequent use of algorithms ... of the underlying pattern of thought ... physiological presentation.

Physiology does appear however to be ... greater depth than Anatomy ... expanded by additional ... [illegible]

Despite the obvious differences in the knowledge between the two subjects this book ... make a valuable contribution to a school library providing a reference for the student and ... later in the preparation of visual aids ... classroom.

G J

THE FABER MEDICAL DICTIONARY Edited by Sir Cecil Wakeley Bt. Second edition ... J. G. Bain. Pp 483. London: Faber & Faber ...

This ... medical dictionary ... for quick reference and ... guide to pronunciation ... a balance between ... library ... Having said that ... there must be ... and it was perhaps ... (both daily and nightly) ... did not find.

This dictionary can be recommended to those in any way connected with medicine but especially ... para medical field. It is just the right size ... the desk but rather too bulky for carrying ... briefcase.

J B

TRYPANOSOMIASIS AND LEISHMANIASIS with special reference to Chagas' Disease. Ciba Foundation Symposium 20 (new series). Pp 353. Excerpta Medica. North Holland. $17.50

This Ciba Foundation Symposium is a ... report of what reads almost like a family meeting. Each participant is an expert in his field and ... reported discussions are clearly ... previous happy meetings.

It has fallen to give those who have not ... [illegible]

[illegible] approach of [illegible] foundation [illegible] much [illegible]

P.J.P.

SURGERY OF VIOLENCE [illegible] British Medical Association. Pp 47 £1.00

This 48 page paper volume represents [illegible] articles published in the British Medical Journal [illegible] The Surgery of Violence [illegible] surgeons in Northern Ireland describing their own experience [illegible] troubles.

It is pleasing to note that [illegible] principles [illegible] the management of [illegible] emphasised [illegible] nature of wounds. There are a large number of [illegible] practical hints [illegible] but it must be emphasised that this experience applies to a large [illegible] hospital [illegible] Mr Rutherford's article [illegible] emphasises [illegible] would not apply in [illegible] hospital [illegible]

This book [illegible] British Medical Journal [illegible] essential reading for all medical officers in the Armed Services. P C F

BOOK OF CHILD CARE By Dr Hugh Jolly. Pp [illegible] London: George Allen & Unwin Ltd. £6.50

Dr Jolly's book is divided into two [illegible] intended [illegible] a reference [illegible] adequate [illegible]

The first half of the book [illegible] help parents to understand their children's behaviour by emphasising [illegible] physical and mental [illegible] children [illegible]

The book should be read by all [illegible] A N B

SYNOPSIS OF GYNAECOLOGIC ONCOLOGY By Philip J. Disaia, C P Morrow, D E Townsend. Pp 368. Illustrated. Chichester: John Wiley & Sons Ltd. £10.00

This is a [illegible] book dealing with a somewhat specialised subject and emanates from the University of Southern California, Los Angeles.

The subject of gynaecological malignancies is [illegible]

[illegible]

M C H J

SEA SURVIVAL By [illegible] Pp 148 London: Pan Books [illegible]

The aim of the [illegible]

[illegible] charts at £5.95 will discourage the [illegible] student from having one in his display.

W A N M

HUMAN BIOLOGY IN HEALTH AND IN DISEASE
By S E Burke Pp XIV + 413 New York and London and Churchill-John Wiley & Sons Ltd £5.50

When the subject of General Biology was introduced into the schools it was intended to give an appreciation of life processes as applied to man but too much attention was paid in the anatomy of selected animals and plants and too little to man. Thus an additional subject Human Biology emerged in an endeavour to make man the paramount consideration. It aimed to show man in correct relationship with other living organisms and to show how he could exert a measure of control over his environment. This Human Biology syllabus deals with man as a mammal looks at living systems and considers man in his environment including health and disease.

This book does not attempt to cover the syllabus for the GCE examinations in Human Biology or allied subjects but it does relate the subject to health and disease and as a lecturer in the subject I find it fulfils a long felt want. It gives clear simple descriptions of the structure and functions of the human organism and of some of the common disease processes affecting the various systems. The author claims it could be used as a nurse course in human biology and common pathological conditions for students in the Allied Health Professions and I agree with him. It would make interesting reading for the non-sitive layman he information for sixth formers considering training in one of the nursing professions and would be a useful reference book for social workers with little or no medical background knowledge because the descriptions of the diseases diagnostic procedures and treatments are accurately illustrated written and easy to follow.

The book is well bound attractively [illegible] clearly printed and feels good in the hand. There are many well drawn line illustrations and anatomical transparencies. X-ray photographs and a glossary which states clearly that it is not a medical dictionary. The author recommends students to refer to Taber's Cyclopedic Medical Dictionary for more enlightenment.

It is written in an effective style with considerable economy of words and I read the book with pleasure, interest and pleasure. Each chapter concludes with a list of questions. The author claims that if the student can answer the questions he has mastered the essential content of that chapter but I cannot agree with this because most of the questions test only factual knowledge (recent memory) if you like) and not understanding application or synthesis.

I was pleased to see chapters on Radiation Ageing and Stress not usually found in human biology textbooks but surely relevant to the study of man. A Laboratory Manual in Human Biology in Health and Disease should accompany the textbook but this was not available to the reviewer. I shall use this book in my classroom.

J Y McN D

OPHTHALMIC NURSING By P Garland SEN SCN Sixth edition London Faber & Faber £2.95

The sixth edition of Miss Garland's well known text book comes in hard and soft covers. It is well illustrated is easy to read and should be particularly useful in the Service in any situation where eye casualties are handled.

While not wholly representative of inpatient surgical techniques in its small compass it provides an adequate basis for instruction in the pre-operative and post-operative nursing of ophthalmic surgical patients.

AJR

MEDIC ALERT

The Medic Alert Foundation is a non profit charitable tax exempt organisation founded in 1956 and dedicated to educating and encouraging individuals to wear on their person identification of any medical problem that should be known in an emergency.

To accept the vital message of an existing medical problem the Foundation distributes a metal emblem that bears the symbol of the medical profession and the words 'MEDIC ALERT' emblazoned in red on the face of the emblem. This also carries a telephone number to which doctors can refer 24 hours a day. A medical information wallet certificate is provided with each emblem. The membership fee is £3.50 plus VAT which includes a bracelet (or £4.25 plus VAT for the necklace) in stainless steel and one medical problem engraving. Ten new pence plus VAT is charged for each additional engraving.

Further information can be obtained from **Medic Alert Foundation, 9 Hanover St, London W1R 9HF.**

SERVICE NEWS

OBITUARIES

SURGEON CAPTAIN (D) THOMAS HUNT LDS RCS RN Retd died on September 3 1975

Surgeon Captain (D) D L Gooch OBE writes

The recent death of Surgeon Captain (D) Thomas Hunt at the age of 77 saddened his friends in the dental and medical branches

Tom Hunt was born on November 19 1897 and was brought up near Kidderminster As a youth of 17 he ran away to join volunteering as a Boy Telegraphist in the Royal Navy during the First World War He was serving in an armed trawler at Murmansk during the Bolshevik hostilities After the war years he entered Birmingham Dental School and qualified L D S R C S in 1923

He returned to his old love of the sea and rejoined the R N as a Surgeon Lieutenant (D) in July 1923 During his early naval career he served in HMS *Malaya* and *Renown* and in HMS *Ganges* The quality of his work and his conscientiousness were recognised when he was appointed in 1933 to Haslar as the specialist dental officer This began a lasting relationship with the medical service Become he served at Eaglehurst before the Second World War and at Plymouth just after During the war he undertook two important administrative posts As S D S of HMS *Rodney* he commissioned the establishment and set up a month training organisation for the inspection and care of the hundreds of recruits Then in 1943 he was sent to the States to HMS *Auburn* in New Jersey where he not only arranged the care of the crews of the convoy carriers but also acted as an ambassador of the R N dental branch to the United States

While he was S D S as an acting Surgeon Captain (D) at HMS *Royal Arthur* in 1947 he obtained possession of his lovely old house The Manor House at Corfe Mullen and gathered about him his wife and himself such great joy He was promoted to Surgeon Captain (D) in June 1949 In 1950 he was appointed to the R N Medical School (now I N M) at Alverstoke as Director of Dental Training and Supplies His final post was as C D S in Chatham in 1952 retiring in December 1954 He seized the opportunity to continue serving the Navy as a retired officer in the rank of Surgeon Commander (D) for a further three years finally retiring to Somerset in October 1958

He was deeply distressed by the unfortunate loss of his wife in 1963 As a widower he found it difficult to settle He gave up his lovely Somerset home and moved first to Cheltenham and then to Malvern where he died But he was supported in his loss by his pride in their only child Robin who was serving as a doctor in his beloved Royal Navy

The loss of this gentle man who set a great example with a particular [illegible] administration [illegible] contemporaries and [illegible]

We regret to record the death of Surgeon Captain J R LAWRANCE OWEN MVO MBE LMSSA DA RN on September 28 1975 at the age of 49

John Roger Lawrance Owen joined the Royal Naval Medical Service on July 2 1953 as an Acting Surgeon Lieutenant He was promoted to Surgeon Lieutenant Commander on January 2 1961 to Surgeon Commander on December 31 1968 and Surgeon Captain on December 31 1974

Amongst his appointments he had served with the Home Fleet (HMS *Zest*) Mediterranean Fleet (HMS *Chamefort*) and in PMO of HMS *Bulwark* in the Aden Task Force he was mentioned in HMS Ocean at Suez in November 1956 He also had a period of service with the RAN in Sydney and with the British Joint Services Training Team in Accra Ghana On the latter he was present at the time of the redundancy ship which deposed President Nkrumah in 1966 after which being awarded the MBE(Mil) He received the Ghana Revolution Medal in recognition of his services in the maintenance of casualties during the emergency and in addition in HM Yacht *Britannia* from 1968 to 1970 and was on board for the Royal Tours of South America Fiji Tonga New Zealand and Australia He was also in attendance on HRH The Prince of Wales on the occasions at Caernarvon He was invested with the MVO in 1971 He served as MOIC in the Royal Naval Hospital Mauritius from 1971 to 1973 following which he spent a short period on ran service with the RAMC in Northern Ireland His last appointment was as Deputy Director Medical Personnel in the Department of MOD(N)

He was an Officer of the Order of St John and Commander of the Order of St Lazarus

Surgeon Captain Lawrance Owen leaves a wife and three children to whom we offer our deepest sympathy

We regret to learn to record the death on April 25 1975 of **Surgeon Commander (D) Stephen Edward BROWN RN** retd at the age of 77

Stephen Brown saw active service with the Corps of Lancers In the line during the First World War After the war he became a dental student He qualified in 1922 and joined the Royal Navy as a Surgeon Lieutenant (D) in November of that year He was promoted to Surgeon Lieutenant Commander (D) in 1928 and to Surgeon Commander (D) in 1936

He gave over 31 years of valuable service in the Royal Navy in many Ships Royal Ships Establishments and Hospitals This long service ended with a final

[illegible] SDS at HMS *Gamecock* where he [illegible] January 1951 until he retired [illegible] in 1953.

[illegible] retirement from the RN he practised in [illegible] from 1956 at Rochester, [illegible] 1974.

We regret to announce the death of **General Major Medecin Jules VONCKEN** on June 12 1975 at the age [illegible] 18[illegible].

General Voncken was a most distinguished medical officer of the Belgian Army who served with distinction from 1909 until 1935. His war-time experience during the First World War aroused a lasting interest in human rights and subsequently he devoted his life to the welfare of victims of conflicts and catastrophes. He will also be remembered for his great contribution to [illegible] information and professional relationships between military medical personnel the world over.

Miss E D (Sally) BISHOP Principal Matron RRC died suddenly on February 12 1975 at her home in Littlehampton.

Miss C F J Cook Matron in Chief QARNNS writes:

Miss Edith Dora Bishop was a member of Queen Alexandra's Royal Naval Nursing Service from January 1928 to August 1954. Her career included appointments in Malta, Simonstown, Hong Kong and [illegible]. She also spent a period in HMHS [illegible]. At her retirement she was Principal Matron at RN Hospital Stonehouse.

After leaving the Service she remained a [illegible] member of the QARNNS Association. Known to her wide circle of friends as Sally, she will be remembered for her fine sense of humour and her great understanding of the problems of others. She will be sadly missed as an enthusiastic [illegible] whilst and a [illegible] of [illegible] in the Service [illegible] Church [illegible] friends and [illegible].

Miss G B MARTIN Principal Matron RRC died on May 13 1975.

Miss C F Cook writes:

Miss Grace Martin trained at the London Hospital and then joined the QARNNS in 1927. During her 25 years in the Service she held a wide variety of appointments. These included Malta, Hong Kong and [illegible]. During the war she spent a year in HMHS *Amarapoora*. Her last appointment was as Principal Matron at RNH Haslar where she retired in 1952. On [illegible] will be her farewell dinner [illegible] she received a present of garden tools and a wheelbarrow in which she was pushed into the dining [illegible].

[illegible] in Alexandria Miss Martin had been in poor health [illegible] and after a short last illness she [illegible] Haslar in May. She will be remembered [illegible] by her colleagues and friends, especially those [illegible] of the Portsmouth Branch of the QARNNS Association. She was a loyal member and attended all the [illegible].

Mrs L TICKNER (nee LETCHFORD) Superintending Sister ARRC died suddenly on May 30 1975. She trained at the General Hospital Plymouth and joined the QARNNS in December 1943. Her career included appointments in HMHS *Tjitalengka*, RNH Plymouth, Malta, Chatham and Admiralty where she was Secretary to the Matron in Chief. She was invalided [illegible] married the Reverend J [illegible].

Miss Helen Moore (Matron [illegible]) [illegible]

It was tragic that at [illegible] Lynn Tickner should have suffered severe illness from which she never fully recovered.

It must have been due [illegible] her indomitable spirit but above all to the ceaseless loving care of her husband John and the strong Christian faith of both of them that she survived [illegible].

Nothing less than the best [illegible] did for Lynn and she set herself the highest standards in all she undertook.

Not only was she an excellent Sister, but having been a patient of hers I know that she was also a superb nurse and that she gave one a feeling of complete trust and comfort. To Lynn one was an individual and not merely a case.

During the time she was my helpful Secretary at the Admiralty she gave me loyal, painstaking and devoted service. I grieve for John and for the loss of a loved friend.

HONOURS

Queen's Birthday Honours 1975

Companion of the Bath
Surgeon Rear Admiral G A Binns QHS

Queen's Honorary Surgeon
Surgeon Rear Admiral P D Gordon Pugh OBE

Queen's Honorary Physician
Surgeon Captain G R Whaldon

HIGHER QUALIFICATIONS*

Surgeon Lieutenant Commander J D Buchanan — DCP

Surgeon Lieutenant Commander D P Price — MRCGP

Surgeon Lieutenant Commander D L Swan — FFARCS

Surgeon Lieutenant Commander A H Milne — MRCGP

Surgeon Lieutenant Commander P D Kirkpatrick — MRCGP

Surgeon Lieutenant Commander G H G McMillan — MSc (Occupational Medicine)

Surgeon Lieutenant Commander (D) K Pendrill — MSc (Periodontology)

Surgeon Lieutenant Commander (D) N Harkness — MSc (Advanced Conservation)

Surgeon Lieutenant P Lazarus — MRCP

Surgeon Lieutenant G L Pryor — FFARCS

* With the formation of the Royal College of Radiologists in March 1975 all holders of the Fellowship of the Faculty of Radiologists (FFR) relinquished this diploma and became Fellows of the Royal College of Radiologists (FRCR).

PROMOTIONS

To Surgeon Rear-Admiral C. M. D. Critchall, J. D. Richards, P. J. S. G. H. G. McMillan, E. F. Dewar, J. T. H. D. J. Lack, J. F. Wollaston, C. P. Ashby, D. S. Lovell, M. A. White.

To Surgeon Lieutenant-Commander (D) G. W. Myers, S. W. I. Hindley.

To Surgeon Lieutenant M. J. H. Ilsley, C. D. Hutchison, G. A. E. Millet, R. F. Ashton, J. I. M. Fox, D. K. Price.

To Surgeon Lieutenant (D) P. F. Hughes, S. Davies.

To Acting Surgeon Lieutenant W. A. L. Mitchell, P. H. Cooper, R. J. H. Robertson, R. J. Watney, G. A. Turner, M. C. Frampton, A. W. Mills, G. L. Wetherell, R. W. Pickenham, P. G. N. G. Williams, R. W. G. Ward, I. C. Grant.

Provisional selections to date December 31, 1975

To Surgeon Captain J. W. Richardson, OBE, E. L. P. Barnard.

To Surgeon Commander C. N. Barlow, D. L. Swann, M. R. Smith.

To Surgeon Commander (D) M. J. Swann.

NEW ENTRIES

Surgeon Lieutenant A. B. Maclean.

Surgeon Lieutenant (D) H. D. Warren, M. A. Critchlow, P. I. Dewar, W. H. F. Clark, I. n. Cowley.

Surgeon Sub-Lieutenant, W. R. Sawell, V. C. Hunt, A. Qasle, A. E. Maclean, E. P. Collinwe, S. M. Munro, W. G. Murphy, D. A. Vereys, P. Wand, K. J. Aitchison, J. K. Ramage.

TRANSFERRED TO PERMANENT COMMISSION

Surgeon Lieutenant Commander M. R. Smith, R. E. Lamlett.

TRANSFERRED TO 16 YEAR PENSIONABLE COMMISSION

Surgeon Lieutenant Commander (D) A. C. G. Surgeon Lieutenant S. Crooks.

COMPLETION OF SHORT SERVICE COMMISSION

Surgeon Lieutenant Commander Q. J. M. Quinn, R. M. Couch.

Surgeon Lieutenant J. P. Charlesworth, D. E. R. d, M. K. Rowlands.

Surgeon Lieutenant (D) L. G. Hirst, S. C. P.

MEDICAL SERVICE OFFICERS

Queen's Birthday Honours 1975

Officer of the Order of the British Empire

[illegible]

[illegible]

Higher Qualifications

Lieutenant Commander R. S. [illegible] Dip. Health Services, [illegible] (Lond.).

Lieutenant M. G. Harper, MS, [illegible] Studies) (Univ. Surrey).

Promotions

To Lieutenant Commander N. Carter.

To Lieutenant J. K. M. Ward.

QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

Queen's Birthday Honours 1975

Commander of the British Empire

Miss Cynthia Clarke RRC QHNS
Matron-in-Chief

Re Entry

Miss J U Megginson *Senior Nursing Sister*

New Entries

Senior Nursing Sisters M E Ed[illegible] S B Mears M S Burt J J Green
Nursing Sister H R M Schofield J M S Dodds J Fagan C L Smith
Quarters Officer L J Singer

Promotion

To Superintending Sister Mrs G D Vi[illegible] (nee Williams)

ROYAL NAVAL RESERVE

Honours

Officer of the Order of the British Empire
(1 1 75)
Surgeon Captain P de B Turtle VRD

Promotions

To Surgeon Lieutenant Commander I N Hudson D J Murray Bruce J C W Evans J A Bennett J M Blair G Wray M A Warburton A M George J Farmer D Seppitt B G Glendinnen A R Morris M G Barley S M Lord

Retirements

Surgeon Captain K M Backhouse OBE VRD
Surgeon Captain J F F Smith VRD
Surgeon Commander J J McMullan RD
Surgeon Lieutenant Commanders J M Burn F G Hardiman R Whiting L N Dewse D W Heaviside H R Hewitt

RN RETIREMENTS

Retirement of Surgeon Captain D O Holmes RN

[illegible] on November 1[illegible] like up the appoint[illegible] the Health and Safety Ex[illegible]ted Health and Safety at Work Con[illegible] wishes go with him in his new career.

RETIREMENT OF SURGEON REAR ADMIRAL C. L. T. McCLINTOCK, CB, OBE, QHS

Surgeon Rear Admiral and Mrs C. L. T. M[illegible] being [illegible] from RN Hospital Haslar [illegible] of Admiral McClintock's retirement as Medical Officer in Charge on June 30 1[illegible] ends a distinguished Surgeon's R[illegible] fill the appointment as MOIC of the R[illegible] Hospital Haslar.

[illegible] and Mrs McC[illegible] Bermuda [illegible] with them [illegible]

RETIREMENT OF SURGEON REAR ADMIRAL G A BINNS CB QBS

Surgeon Rear [illegible] as MOIC RN H[illegible] Surgeon Captain P J [illegible] OBE RN

Surgeon Rear Admiral [illegible] Binns retired from the [illegible] after 37 years [illegible] appointment on [illegible] Medical Officer in the [illegible] and MOIC RNH [illegible] as MOIC and Staff Medical Officer to Flag Officer Gibraltar Admiral Binns intends to have a short holiday and then hopes to get back into his own speciality as an ophthalmologist. Our best wishes go to him and his wife for a very happy and successful life outside the Service he has served so well.

Retirements

Surgeon Captain (Commodore) D G Dalglish MVO OBE (invalided)
Surgeon Commander I M MacIntyre RN (invalided)
Surgeon Commander (D) R S Haigh (own request)

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